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OCCUPATIONAL INJURIES DUE TO RADIUM

REPORT OF CASES

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Associate Professor of Medicine, Albany Medical College

ALBANY, N. Y.

During the past two years, the Cancer Commission of Harvard University has been engaged in obtaining data concerning the therapeutic value of radium. Owing to the great variety in type of lesions to be treated and in their distribution, the methods of application have been varied, chiefly as to differences in filtration and protection. This has necessitated in the application the frequent manipulation of highly radioactive tubes and applicators.[1]

Rutherford[2] says:

> Walkhoff first observed that radium rays produce burns of much the same character as those caused by Roentgen rays. Experiments in this direction have been made by Giesel, Curie and Becquerel and others with very similar results. There is at first a painful irritation, then inflammation sets in, which lasts from ten to twenty days. This effect is produced by all preparations of radium, and appears to be due mainly to the alpha and beta rays. Care has to be taken in handling radium on account of the painful inflammation set up by the rays. If a finger is held for some minutes at the base of a capsule containing a radium preparation, the skin becomes inflamed for about fifteen days and then peels off. The painful feeling does not disappear for two months.

Although these rather *acute* reactions due to radium are apparently well known to *physicists* working with radioactive substances, and considerable experimental work has been done on animals by biologists, very little attention has been paid to the more chronic changes. The purpose of this paper is to record a detailed description of symptoms and signs from the *clinical* point of view, and to emphasize the importance of these as occupational injuries, so that more serious effects may not result in those engaged in the application of radium as a therapeutic procedure.

Personal observation in London and Vienna and in Germany while I was investigating the status of clinical work with radium had led me to note the possibilities of discomfort and injury from contact with radioactive substances.

In London at the Radium Institute the plan was adopted of rotation in service each month for the nurses handling the applicators. Attention had been called to the effects on the fingers of those handling the radium by sensory disturbance in the form of pain and anesthesia, first noticed by the difficulty experienced in preparing eggs at the table according to the English custom. This may seem a trivial instance, but it well illustrates a peculiar sensitiveness to heat and the difficulty of delicate manipulation with the affected fingers.

On the other hand, severe injury was observed in Vienna in the case of one who had handled large quantities of radium. The thumb, forefinger and middle finger of the left hand showed severe lesions, particularly in the form of atrophy and intractable ulceration.

In Paris at the Laboratoire biologique du radium, particular inquiry was made as to the effect of radium on the hands, and it is interesting to note that one of the attendants who had been making almost daily surface applications for over two years had up to that time experienced no injurious effects whatever. This is probably due in part to the type of applicators used in this clinic.

From this it will be seen that injurious local effects were anticipated so that the changes to be described were not acquired unwittingly but in spite of caution. The increasing use of large quantities of radium warrants a detailed description and record of these changes, not only because of the annoyance and discomfort caused, but also as a warning from analogy to the Roentgen ray of more serious late effects, such as atrophy, intractable ulceration and even cancer. Already in certain instances there has been caused not only great annoyance from discomfort but actual impairment in manual dexterity in performing delicate manipulations because of persistent local anesthetic effects.

Throughout the first year of the radium work at the Huntington Hospital, a considerable proportion of the applications were made by the physician in charge. As a result of manipulation due to the clinical applications of radium in the variety of cases referred to above, a few weeks after beginning there was noticed slight though gradually increasing sensory disturbance in the finger tips, particularly on the ulnar side of the first phalanx of the thumb and the radial side of the terminal phalanges of the index and middle fingers of each hand.

These symptoms occurred very insidiously, and consisted of blunting of sensibility of the finger tips, paresthesia, such as increased sensitiveness to heat and pressure, amounting at times to actual pain, and anesthesia of varying degrees.

The subjective disturbances were out of all proportion to the objective findings, which included flattening

1. Ordway, Thomas: The Use of Radium in Cancer and Allied Conditions at the Huntington Hospital, Boston Med. and Surg. Jour., Nov. 19, 1914.
2. Rutherford, Ernest: Radioactive Substances and Their Radiations, New York, G. P. Putnam's Sons, 1913, p. 327.

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of the natural ridges on the affected fingers with consequent changes in the characteristic markings of the finger prints, thickening of the horny layer of the epidermis with scaling, failure of the tips of the fingers to resume their normal shape after pressure, a sort of pitting, and upgrowth of the cuticle at the base of and underneath the nails, which were easily cracked, extremely brittle, and tended to stand off from the fleshy part of the fingers.

Each assistant and nurse before engaging in the clinical application of radium was warned of the annoying and possibly dangerous effects, and told not to handle the active tubes of emanation with the fingers but to make use of forceps. In spite of this, a certain amount of handling was unavoidable in changing the radium tubes for suitable filtration and protection in the different cases.

Nurses and assistants, and also members of the commission have been asked to describe carefully and independently the subjective and objective changes produced. The onset, variety and annoyance of the effects may be best understood and appreciated by the individual descriptions to be cited, for the most part in the sequence of their occurrence.

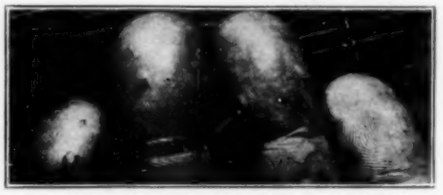

Fig. 1 (Case 7).—Photograph showing the flattening of the ridges on the tips of the index and middle fingers compared with the ring and little fingers, left hand.

Case 1 (C. O. 15.20).—A physician began making routine applications of radium during the early part of November, 1913. These continued in increasing numbers until the latter part of January, 1914. Since that time, applications have been made only in special cases.

After a few weeks the tips of the thumbs, particularly toward the ulnar side, and the fore and middle fingers, especially toward the radial side, gradually became numb and felt unnatural from the blunting of sensibility. They were very tender on pressure so that buttoning small buttons was not only difficult because of the anesthesia but also painful. Hyperesthesia was also noted in a markedly increased sensitiveness to heat. There was paresthesia in the form of a peculiar unnatural feeling of the finger tips and awkwardness in using the fingers for delicate manipulation. Because of the anesthesia, small objects were frequently dropped, and difficulty was noted in taking pulses with the affected finger tips, which are those commonly used. These subjective symptoms have been very pronounced, persistent and out of all proportion to the objective findings.

Fig. 2 (Case 4).—Finger prints of fingers of the left hand. Note that the characteristic ridges are less marked and show more breaks on the thumb, index and middle fingers, particularly on the extreme tips; left hand; from left to right: little finger, ring finger, middle finger, index finger and thumb.

The affected portions of the fingers described above became smooth and shiny, and the ridges giving the characteristic finger prints became less marked and almost obliterated (Figs. 1 and 2). Later the epidermis was thickened, dry and parchmentlike, and on pressure the pad of the finger tip remained indented for some seconds instead of immediately resuming its rounded form (Fig. 3).

The thickened horny layer became wrinkled and cracked, and scales of varying size repeatedly desquamated. The nails stood off from the fleshy part of the affected fingers, and there was a marked tendency for the upgrowth of the tissue beneath the nail (Figs. 4 and 5).

At the present time, although the patient has actually handled the radium for clinical application only occasionally for almost a year, the pain, tenderness and sensitiveness to heat and the objective signs have largely disappeared; notwithstanding this interval, the dryness, parchmentlike feeling, partial anesthesia and slight tenderness of the affected finger tips persist.

Case 2 (C. O. 15.21).—A nurse began making routine applications of radium in December, 1913, and continued this until the last of February, 1914. After that time occasional applications were made with an interval of three months on vacation. "Two weeks after first handling the radium tubes, dryness of the skin was noted. A little later the flesh on the finger tips of both hands, especially the thumbs and forefingers, looked yellow and was easily indented on pressure. In about a month the skin over the finger tips began to crack and peel, and the dryness of the skin extended down the fingers to the palms of the hands. The flesh grew more rapidly than normally at the base of and below the free edge of the nails, which became very brittle. Numbness developed in the finger tips of both hands, awkwardness in picking up articles, pain on buttoning clothing, sensitiveness to heat, and later hot throbbing sensations extending the entire length of the fingers on handling radium. At present there is no tenderness, but marked paresthesia and slight anesthesia, slight peeling, dryness and marked numbness of the tip of the thumb, index and middle finger of each hand. Great annoyance is caused and difficulty in delicate manipulation."

Case 3 (C. O. 15.22).—A nurse began making routine clinical applications of radium in February, 1914, and continued until June, 1914.

"After a few weeks the tips of the fingers became yellowish-white, gradually growing whiter until the fingers looked as if they had been burnt. The skin about and under the nails hardened and grew thicker. The fine lines on the finger tips began slowly to disappear, leaving the tips tight, white and swollen. The finger tips remained white, and minute cracks appeared. Then from the whole tip of the fingers the skin peeled off, leaving the ends smooth, pink and shiny (Fig. 6).

"The tips of the middle finger and thumb of the left hand again became swollen and hard; the thumb appeared yellow as if calloused; the skin is dry and cracked and there is a spot on the thumb 1 by 2 cm. that is red and smooth where the upper layer of skin is cracked and peeled off.

"The left forefinger is swollen, hard and yellowish brown with minute cracks as if the skin were too tight; the fingers are not wholly straight, but curved a bit toward the palm. The nails seem to stand out from the fingers (Fig. 4). The cuticle is dry and white, cracked in some places and inclined to grow down around the nail. The finger tips dent on pressure.

"Subjectively it is noted that the fingers were sensitive to pressure especially on the nail. They gradually became stiff and were tender on bending. Definite pulsation was felt about a month after first using the radium. The fingers were very hot and felt much as a mildly septic finger feels; they gradually became oversensitive to heat, and the sense of touch was not so sure. Articles would drop from the fingers.

"This has been persistent up to the present time, and it is hard to pick up pins or button anything. Pressure on the nail and on the very tip of the finger is painful. The fingers feel very hard, stiff and awkward. It is difficult to tie and loosen hard knots. The hand is dry and rough, and feels big."

Case 4 (C. O. 15.23).—An assistant, medical student, began making routine clinical applications of radium, June 3, 1914.

"The work consisted in transferring glass capillaries of emanation from one steel jacket to another, or to flat applicators (Fig. 7) in fixing silver sheaths over the steel, in arranging a number of steel tubes between pieces of lead, paper and gauze and then wrapping all together in rubber sheeting and adhesive. Tubes of emanation were also placed in various special applicators. In unscrewing the tubes they were held in dressing forceps by the left hand, and the points and eyes were held by the right hand occasionally between the thumb and forefinger, but almost always straight half length hemostats. The applicators were held in the left hand and fastened with adhesive by the right hand. Glass capillaries have never been picked up or held by the fingers, and only rarely in the early part of the work were the steel tubes so held and then for not more than a few seconds. The number of applications per day has varied from five to sixteen, average ten. This indicates approximately the number of times a day that the tubes were handled or changed.

"During the first three weeks there was no noticeable effect. Then gradually the tips of the thumbs and index fingers assumed a smooth shiny appearance with flattening of the ridges (Figs. 1 and 2). This became noticeable at the end of the fourth week. Up to this time there was no unusual sensation. During the fifth week a very thin layer of epidermis loosened and peeled off the tips of the thumb and index fingers from the nail to half way to the second phalanx; this scaling took a week, during which the finger tips affected became somewhat swollen, and there was a sense of fulness in them. They were warmer to touch than the other fingers of either hand. There was slight sensitiveness to pressure and a tendency to drop small objects, such as pins, if picked up in the usual manner. During the sixth and seventh weeks the fulness and discomfort disappeared. In the eighth week the swelling increased and the skin became tense; the sense of fulness returned, and pain was experienced on touching a small object, such as the head of a pin. There was also some difficulty in picking up small articles and holding them, especially if not directly thinking of then.. After the eighth week of making radium applications a vacation of two weeks was taken; during this time, in which no radium was handled, the outer layer of skin on the affected finger tips again became white, hard and peeled off, leaving the fingers much more sensitive to pressure, either gradual or sudden, and to heat. Indeed, severe pain was felt when taking up a cup of hot coffee, a heated test tube or on washing the hands in water of such a temperature as was not at all painful to the unaffected parts of the skin.

Fig. 3 (Case 1).—Photograph showing the tip of the thumb remaining indented after pressure indicating the hardening and "empty" feeling of this finger; a late effect; moderately anesthetic.

Fig. 4 (Case 3).—Photograph showing the flattening of the ridges of the tips of the index and middle fingers of the left hand. Note how the free ends of the nails stand away from the fleshy part of the finger tip; also note on the forefinger the upgrowth of the skin beneath the nail.

"Similar process of swelling of the finger tips, hardening of the superficial layers, cracking and peeling was repeated in the thirteenth, fifteenth and seventeenth weeks. Each time during and immediately following the peeling there was marked tenderness and acute pain on striking or pinching any object; occasionally a throbbing sensation, more marked if the arms were hanging down, was felt in the affected fingers. The tenderness was so severe that it was difficult to button small buttons, or to tie or untie knots, such as shoe strings and necktie; in one instance a room mate's assistance was required in undoing a tighly drawn necktie. At present the skin of the tips of both thumbs and index fingers and small areas of the left middle and ring fingers is smooth and shiny, the ridges are flattened or absent, and the surface is cracked in appearance. When pressed on the flesh of these finger tips remains indented for an appreciable time. There is no apparent difference in vascularity as judged by their color.

"The index finger and thumb of the left hand, which is most affected, are distinctly tapering in contrast to the flat blunt tips of the other fingers and to their own condition before June 1. On fully extending these two fingers and to a less extent the index finger of the right hand, there is a marked pulling sensation at the junction of the flesh and the nail. The finger tips are at the present time only moderately tender."

CASE 5 (C. O. 15.24).—Assistant, medical student, began making clinical applications of radium, July 4, 1914. "First noticed slight tenderness in the tips of left thumb and index finger. This gradually increased to pain on touching objects. Otherwise there was no abnormal sensation. About Aug. 8, 1914, felt in the finger tips a very distinct pulsation which made it impossible to take the pulse for blood pressure estimation in the usual way. About this time a slight darkening of the color and numbness was noticed. This involved also the tip of the middle finger of the left hand. The tenderness disappeared, but the numbness increased until there was such marked anesthesia that it was impossible to button the shirt without looking because the buttonhole could not be felt with the forefinger or the button with the thumb. The finger tips when pressed on would retain the impression much longer than usual. About a week later a small white spot appeared on the tips and became almost 1 cm. in diameter. This was picked off out of curiosity; it resembled a callus of the palms. The skin beneath was smooth, bright red to pinkish in color, dry and extremely tender. Three areas similar to this appeared. One cracked open, but there was no tendency to bleed. The tenderness was so great that it was necessary to bandage the fingers for a week, when the cracked area healed. On the three fingers of the right hand the superficial layer of skin peeled from the tip to the middle phalanx. At present date the fingers appear normal except for smooth, glossy appearance and a tingling sensation which seems to spread over the whole finger tip when a small object such as the head of a pin is touched."

CASE 6 (C. O. 15.25).—Assistant, medical student, made no routine clinical applications of radium, but on one occasion brought the day's supply of radium emanation from the physical laboratory to the hospital and thoughtlessly put the active tube in his pocket. "On July 28, 1914, I carried a tube containing 32 millicuries of radium emanation in the left pocket of my trousers for about one hour. On Aug. 4, 1914, I noticed an irregularly oval red spot on the anterolateral aspect of my left thigh. It was about 2 cm. long and 1 cm. wide. At this time there was no tenderness. The red spot gradually became tender, at first only to marked pressure and later to a slight touch. The skin in the center of this spot became yellowish, and by Aug. 12, 1914, there was a yellowish spot surrounded by a red border which faded into the surrounding normal skin.

"At this time the spot was very tender and felt warm. About August 15 the yellowish skin had scaled off, leaving

a bright glistening yellowish-red area (Fig. 8) which soon became covered with a crust. This was frequently rubbed off and reformed, each time being smaller, until September 5, when the crust disappeared, leaving a smooth somewhat glistening area a little more red than the adjacent skin and surrounded by a margin of slight pigmentation. September 28 the redness is gradually fading. December 16 the area is now smooth, white and there has been no tendency for the hair to grow out again."

Case 7 (C. O. 15.26).—A physicist reports: "My first finger burns from the radioactive substances occurred six or seven years ago, and I do not remember their symptoms in

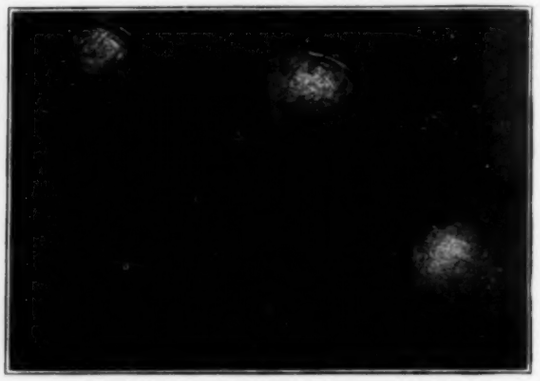

Fig. 5 (Case 1).—Photograph showing the free edge of the nails standing away from the fleshy part of the finger tips and also indicating the upgrowth of horny skin beneath the nails. Compare index and middle with ring finger.

detail. They came from handling large quantities of emanation—from 200 to 250 millicuries.

"Since then six of my fingers have been burned six or seven times, severely enough for the skin to peel off. I have noticed the following symptoms in varying degrees of intensity: sensitiveness to pressure and heat lasting several days, sometimes so much that it becomes impossible to button buttons and hold warm eggs. Occasionally there has been continuous dull pain without pressure or heat. Each finger has been slightly red with a small yellowish spot at the point of the most severe burn. After four or five days the pain and sensitiveness passed away, and the fingers gradually become calloused. After several weeks the skin peeled off over a considerable area, leaving fresh skin that was quite sensitive for a few days. The lines that previously disappeared returned, and the finger tips were smaller than normal for a time, but gradually filled out. In no case has a finger ulcerated.

"There is sometimes a desire to hold the hands closed tighter than they usually rest. On the whole my fingers appear to be less sensitive to touch, etc., than they used to be."

Case 8 (C. O. 15.27).—A physicist devotes a part of his time in the laboratory daily to pumping the radium emanation into capillary glass tubes, and sealing these into lengths suitable for applicators. During this time the activity is comparatively slight, and they are retained in the laboratory three hours until the maximum intensity develops, when the measurement of the activity is made. "I so frequently burn the tips of my fingers while blowing glass that I was never quite certain, during the early stages of a radium burn, whether the pain was caused by a heat burn or a radium burn. The two sensations are, however, dissimilar. The pain of a radium burn is not at the surface; it is probably better described as 'soreness.' The nearest approach to it in heat burns are the burns caused by holding a glass tube which is just hot enough to cause a burn after four or five minutes. Radium burns, like heat burns, are sensitive to heat. I find it difficult to hold glass in the flame for glass blowing. Radium burns are more painful in the morning. I first notice them while dressing. The explanation of this seems to be that they are relieved by massage, manipulation of the flesh removing the soreness. As the burn progresses, the skin becomes hard and horny. The surface layers later peel off. It has seemed to me that as the burns are getting well, the burned tissue is not as firm as normal tissue; it feels as if there was a hollow space in the end of the finger. Up to March 26, 1914, I have had seven burns."

Case 9 (C. O. 15.28).—An assistant, medical student, reports: "On Sept. 1, 1914, I first began to use radium, but it was not until October 1 that I began to apply it daily in the routine work of the hospital. From then on to the present time I have done part of the outpatient work and some of the work on the house cases. The applicators used were of all sorts, steel tubes, silver tubes and flat applicators. Knowing the effects on others employed in radium application, I have been extremely careful throughout not to expose my fingers unduly, using forceps whenever possible. About December 1 I first began to notice some tenderness in the tips of the index and middle fingers and thumb of the left hand, but the index finger was more tender than the others (I am left handed). A short while afterward the affected finger tips began to feel numb, and sensation was deadened as if a finger cot were drawn over each. The finger tips appeared red, when pressured they felt pulpy, and when the pressure was removed the skin remained depressed like parchment.

"During the last week of December I accidentally seared the tip of my left index finger with a match. The burn was slight and under ordinary circumstances would have healed in a few days. Contrariwise, in two or three days it began to peel, and by January 1 the whole palmar surface of the terminal digit and on the sides toward the nail had peeled, leaving a smooth reddened surface which was exquisitely tender. It was especially sensitive to heat, warm water almost causing me to cry out in pain.

"Three days ago the left thumb showed a tiny break in the skin on the palmar surface toward the tip of the index finger. Within two days it had peeled off entirely, as did the index finger, and the symptoms were the same.

"I have had some relief by applications of 'white wash' left on over night.

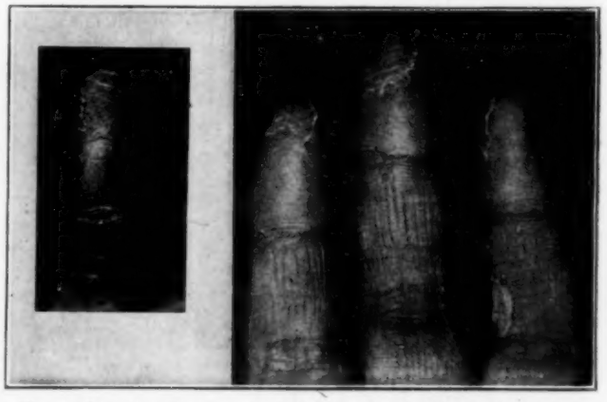

Fig. 6 (Case 3).—Photograph of thumb, index, middle and ring fingers of left hand showing the scaling of the thickened superficial layer of the skin on the radial side of the terminal phalanges and also a similar small area on the second phalanyx of the ring finger.

"The fingers of the right hand show slight smoothing out of the papillae, especially on the thumb and index finger, but no redness or marked tenderness. The sensation of touch is numbed, but not to such a marked degree as in the left fingers.

"It is difficult to state just where to look for the errors in technic to bring about the above burns. At first I thought it might be caused by brief exposures when screwing the eyes into small unscreened steel tubes. The more likely cause it seems is in putting up special applicators or flat applicators where it is almost necessary, under our present technic, to run one's fingers over the tubes or to hold them while a piece of adhesive is being put in place."

COMMENT

In these individual descriptions of the symptoms and signs, the similarity is striking. In certain instances, however, Cases 5, 6, 7 and 8, the injurious effects were due for the most part to acute reactions. In Cases 3 and 4 the changes were chronic with superadded acute, while in Cases 1 and 2 there were no acute burns, but the changes were the slow and insidious effect of repeated exposures. Indeed, in Case 1 there seems at the present time to be a peculiar susceptibility to slight exposure, even after a long interval in which radium has been but rarely handled.

Various general symptoms, such as headache, malaise, weakness, undue fatigue, unusual need of sleep, increased excitability, fretfulness, irritability, disorders of menstruation, attacks of dizziness, etc., have been said by Gudzent and Halberstaedter[3] to be caused by repeated and long-continued exposure to radioactive substances. Such symptoms are, however, common in many persons at times, and as they cannot be accurately and objectively recorded, there is doubt if they can be definitely proved to be due to exposure to radium. They may be due to close confinement, tiring routine and lack of outdoor exercise and other causes. The exposures of some of the cases reported were doubtless large; some were assistants in "fabriks" for manufacture of radium apparatus, and some had been engaged for years during the entire day in work with radioactive substances. It is probable, therefore, that certain general symptoms did occur as a result of this exposure. These symptoms, however, will not be considered in this paper.

BLOOD EXAMINATIONS

Case	Date	Hemoglobin, Per Cent.	Red Blood Cells	White Blood Cells	Polymorphonuclears	Lymphocytes	Large Mononuclears	Eosinophils	Mast Cells
1	8/25/14	100	5,300,000	6,800	46.3	50.7	2.0	0.8	0.2
	9/ 3/14	94	4,708,000	6,900	49.5	47.2	1.0	2.0	0.2
2	1/ 4/15	99	4,464,000	7,400	55.5	34.5	7.0	2.5	0.5
3	8/21/14	99	4,480,000	7,200	60.2	35.7	2.8	0.5	0.8
4	8/18/14	100	5,460,000	9,000	73.6	23.6	2.2	0.2	0.4
	1/ 6/15	100	5,108,000	7,000	61.	30.5	7.75	0.25	0.50
5	1/15/15	.....	5,792,000	8,000	64.5	26.	6.0	1.0	2.5
6	9/ 2/14	100	4,900,000	5,500	53.3	43.8	1.4	0.7	0.8
7	8/21/14	100	5,100,000	6,600	49.8	45.7	3.8	0.5	0.2
8	8/25/14	100	5,600,000	6,000	59.2	33.7	2.6	4.2	0.3
	8/31/14	100	5,400,000	7,800	52.4	39.3	4.8	3.0	0.5
9	1/13/15	.....	.....	8,000	51.	45.	3.	1.	0.
Control A	8/27/14	100	5,500,000	8,400	67.6	28.5	2.9	1.0	0.
Control B	1/ 7/15	72	4,112,000	8,800	67.5	26.	6.0	0.25	0.25

Changes in the blood of radium workers were observed by Gudzent and Halberstaedter.[3] Most striking was the relative and absolute increase in lymphocytes: from 36 to 63 per cent.; average of ten cases, 46.4 per cent.; a relative and absolute decrease in neutrophils, average 50.3 per cent. There was little change in red blood corpuscles, slight diminution in white cells and the hemoglobin was lowered in only two cases, 70 and 71 per cent., respectively.

The blood examinations in the cases detailed above are recorded in the accompanying table.

Although the changes are not striking in all instances, in Cases 1 and 7 the findings correspond with those mentioned above. In the other cases the changes are less marked, though suggestive. Case 4 (in which the assistant had just returned from a vacation away from radium exposure) and Control Case A under similar confining laboratory conditions, but not engaged in routine handling of radium, do not show such blood changes. Case 4 at a later time showed an increase in lymphocytes.

3. Gudzent and Halberstaedter: Deutsch. med. Wchnschr., March 26, 1914, p. 633.

DETERMINATION OF SENSORY THRESHOLD

Although the sensory changes in the affected fingers, as described above, were marked, it seemed desirable to check these up by a determination of the "sensory threshold" of the affected compared with the unaffected fingers. These determinations were kindly made by Mr. John P. Richards under the supervision and direction of Prof. E. G. Martin, who devised special electrodes for the finger tips for use with the Martin apparatus which has been previously described.[4] Dr. Martin reported that of the cases studied (Cases 1, 2, 3, 4 and 8), all except Patient 8, who was quite insensitive on all fingers, showed rather striking differences

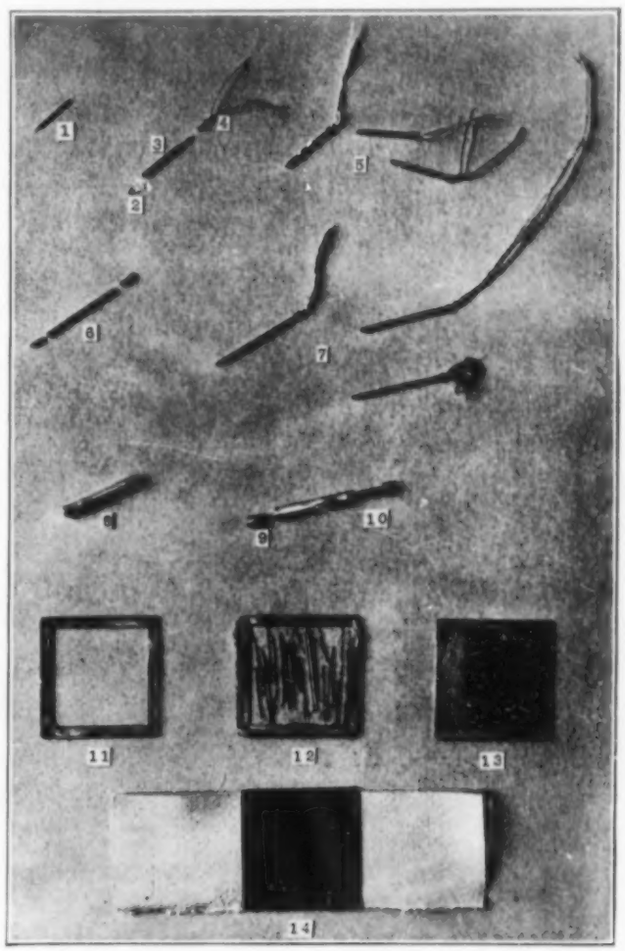

Fig. 7.—Applicators utilized in routine radium treatment (two-thirds natural size): 1, small capillary glass tube containing emanation; 3, thin steel tube to protect 1 from breaking; it is closed by screw ends, 2 and 4; 2 is pointed and 4 has a small eye; 5, same as 3, showing ends closed; one end is tagged with a piece of colored thread for identification as to the measurement of its activity; 5, short steel tubes with pointed ends containing emanation tubes similar to 1; 6 and 7, similar to 5, but twice as long; 8, silver sheath for 7, walls 1 mm. in thickness for filtration; 9 and 10, large rounded ends to prevent perforation of rubber covering; 11, frame of surface applicator; 12, surface applicator containing small emanation tubes, 1, which have become too weak to use in single containers; the small tubes are placed on adhesive plaster, which is applied to the steel frame, 11; 13, square of metal which may be applied to 12 by adhesive, as indicated in 14, for protection or filtration.

4. Martin, E. G.: Measurement of Induction Shock, New York, 1912.

between the radiated and normal fingers, the former being much more insensitive. This relative insensitiveness to the faradic current might suggest injury to the nerve rather than to the terminal sensory end organs. It may, however, be due in some cases to increased resistance of the skin because of thickening of the horny layer.

With the idea of determining whether demonstrable histologic changes occurred in the chronically affected and relatively insensitive finger tips, Oct. 7, 1914, under aseptic precautions, without anesthesia, fragments of skin, including a portion of the corium, were excised with scissors from the tip of the right forefinger and little finger of Case 1; in the first instance there was very slight bleeding and little pain, while in the latter there was rather marked bleeding, soaking through a dressing, and considerable pain. The fragments were potted in Zenker's fluid. Both finger tips healed readily in a few days. Paraffin sections stained in eosin and methylene blue showed numerous nerves and terminal special sense organs. No marked difference was evident between the fragment from the

Fig. 8 (Case 6).—Superficial ulceration on thigh; a reaction from the accidental application of radium, due to keeping radium tube (32 millicuries) in trouser's pocket for an hour.

control fingers by this technic, and specimens were not available for Weigert and Marchi methods.

AVOIDANCE OF INJURY

Various methods have been devised, particularly by Dr. W. T. Bovie, for avoiding these injurious local effects by the least possible contact of the fingers with the radium. Forceps or special vises are used for holding tubes and screwing in or out the tips and eyes; special applicators in the form of metal boxes have been constructed so that the active tubes may be added after the filtration and protection have been arranged, and the surface applicator is then slipped by forceps into a special rubber envelope and fastened with adhesive. This is particularly to avoid wrapping them up by hand in sheet rubber. Leaded gloves, fingers, etc., are clumsy and are not readily worn.

In placing active tubes in special applicators, it will probably not be possible to avoid all contact with radium, and as the effects are not apparent at once, as when handling very hot objects such as heated glass, but only after a period of days or even weeks, it will be difficult to train a worker to avoid contact with the active apparatus.

In the work of making routine applications of radium there should be a rotation in the staff, and persons affected should be freed at least temporarily from such work.

In order to avoid possible general disturbance, the body should be protected as far as possible by metal screens in form of boxes or plates about the radium; there should be frequent ventilation of work rooms, particularly if there is radium emanation present, and a change of duty, shorter hours and periodic physical examination of those working with radioactive substances with special reference to the blood examination is indicated.

SUMMARY AND CONCLUSIONS

From the foregoing it is evident that marked changes may occur on the fingers of those engaged in routine work with radioactive substances. These local objective changes consist chiefly of flattening of the characteristic ridges, thickening and scaling of the superficial layers of the skin and even atrophy and intractable ulceration. These lesions are usually slight compared with the marked subjective symptoms, such as paresthesia, anesthesia of varying degree, tenderness, throbbing and even pain. The persistence of such effects is noteworthy.

Various general systemic symptoms and also blood changes may be produced by exposure to radioactive substances. To avoid such local and general disturbance, special protective and preventive measures have been devised, and those engaged in routine handling of radioactive substances are particularly cautioned.

THE PHYSICIAN AND THE WEATHER BUREAU*

FORD A. CARPENTER, LL.D.
LOS ANGELES

INTRODUCTION

Hippocrates, the Father of Medicine, about 600 years before Christ, wrote a strangely interesting and powerful book on "Airs, Waters and Places." "Such a title immediately suggests climatology," says Dr. De Lancey Rochester[1] in a paper read before this association three years ago, entitled "Climatology as Practiced by Hippocrates," and he believes that this was one of the genuine works of Hippocrates the Great.

Hippocrates, in his introduction to this work, says:

> Whoever wishes to investigate medicine properly should proceed thus: In the first place consider the seasons of the year, and what effects each of them produces (for they are not all alike, but differ much from themselves in regard to their changes). Then the winds, the hot and the cold, especially such as are common to both countries, and then such as are peculiar to each locality. We must also consider the qualities of the waters, for as they differ from one another in taste and weight, so also do they differ much in their qualities. In the same manner when one comes into a city to which he is a stranger, he ought to consider its situation, how it lies as to the winds and rising of the sun; for its influence is not the same whether it lies to the north or to the south, to the rising or to the setting sun.

* Read before the Thirty-Second Annual Meeting of the American Climatological and Clinical Association, San Francisco, June 18, 1915.

1. Rochester, De Lancey: Tr. Am. Climatol. Assn., 1912, xxviii.

HOW THE PHYSICIAN MAY UTILIZE THE WEATHER BUREAU

Dr. Charles F. Marvin, the chief of the United States Weather Bureau said in a recent address, "The Functions of the Weather Bureau of the United States Department of Agriculture are so many, so widespread is its scope that it may be said to encompass practically all fields of life and work." From the very extended nature of the work of the bureau it seems opportune that the medical profession be shown some of the ways in which this service may aid them. The object of this paper, then, is to suggest means by which the medical profession may utilize the vast storehouse of climatic data accessible at Washington and at all weather bureau stations; to prove the readiness of the personnel of the bureau to assist the physician; to present some applications of these data from a layman's point of view and to offer an account of some intensive climatic studies which have been prosecuted by the writer during the past few years.

Every one is familiar with the ordinary health resort advertising literature, a perusal of which gives one the impression that ideal weather conditions only prevail in that locality. Now physicians want facts as to this. They prefer to make their own deductions. They do not want idealizations. The weather bureau presents these facts. The question is, How may these facts be obtained?

THE SOURCE OF METEOROLOGIC DATA IN THE UNITED STATES

The source of weather data is from the regular stations of the bureau, and from the special or cooperative stations. There are about two hundred of the regular stations, and over four thousand of the special stations scattered over the United States. The geographic distribution of these regular and cooperative stations may be noted from Table 1 and Figure 1.

Each of the regular stations of the bureau represents from 1 to 15,000 square miles of territory. There is no limit to the special stations except the securing of congressional appropriation for purchase of instruments, and the securing of a satisfactory observer who will proffer his services in a locality where observations are desired. These special stations, however, must be 20 miles apart. In number of stations, of all kinds, California takes the lead, having a total of 511 meteorologic stations of all classes.

Located at each of the weather bureau stations are one or more trained observers; such stations are equipped with barometers, thermometers, wind-vanes, rain and snow gages and anemometers, and nearly all have sunshine recorders, barographs, thermographs and other apparatus which make a continuous automatic record of the local weather conditions.

HOW THE WEATHER MAP MAY BE UTILIZED

The prime object of the regular stations is to make simultaneous meteorologic observations from which the twice-daily weather map is prepared and weather forecasts are deduced. The duties of the noncommissioned and unpaid observers comprise daily temperature and precipitation observations, so that from both classes of observations it may be possible to construct a satisfactory climatology. So we may say it takes a lot of weather to make a climate.

Fig. 1.—Weather bureau stations in the United States. The geographic position of the regular stations is shown by circles; the approximate number of cooperative stations is designated by figures.

TABLE 1.—APPROXIMATE NUMBER OF COOPERATIVE STATIONS OF THE UNITED STATES WEATHER BUREAU LOCATED IN THE VARIOUS PARTS OF THE UNION

Alabama	61	Md. and Del.	46	Ohio	117
Arizona	80	Michigan	125	Oklahoma	84
Arkansas	47	Mississippi	71	Oregon	137
California	315	Minnesota	82	Pennsylvania	115
Colorado	126	Missouri	78	South Carolina	53
Florida	75	Montana	111	South Dakota	89
Georgia	68	Nebraska	133	Tennessee	69
Idaho	101	Nevada	50	Texas	296
Illinois	96	New England	85	Utah	139
Indiana	70	New Jersey	45	Virginia	57
Iowa	106	New Mexico	160	Washington	136
Kansas	134	New York	111	West Virginia	58
Kentucky	47	North Carolina	87	Wisconsin	94
Louisiana	62	North Dakota	81	Wyoming	77

The cooperative stations enumerated in this list are taken from Climatologic Data from the United States by Sections, ii, No. 3, March, 1915. As all such stations report precipitation, and some statisticians report this element only, the totals were prepared by considering the precipitation stations. Total number in the United States, 4,083.

The regular stations of the bureau, in addition to being clearing-houses for meteorologic information, prepare, twice a day, complete weather observations which are telegraphed to Washington and to certain district centers preparing weather maps. Over a hundred of such stations publish these daily maps. The weather map may be most useful to the physician who keeps track of the storm movements and gathers first-hand information as to existing and coming weather conditions over the United States. He will soon learn to associate stormy, cloudy and comparatively warm weather with those atmospheric whirls called "lows," and fair, sparkling, comparatively cool weather with the whirls called "highs."

As to the further application of this weather map: One of the large California citrus fruit growers times the shipment of his orange and lemon cars so that they will have the advantage of the cool and dry weather

of the weather-map "highs" in their eastern journey. There is no reason why a physician should not do likewise and take advantage of the weather map and route his patients according to the great atmospheric movements and thus avoid deleterious weather conditions. It ought to be a common occurrence for the physician to consult the weather bureau as to the railroad altitudes and average weather conditions along their lines

TABLE 2.—SPECIMEN OF THE MONTHLY METEOROLOGIC SUMMARY ISSUED AT ALL STATIONS OF THE UNITED STATES WEATHER BUREAU, AND AVAILABLE FOR THE USE OF THE PUBLIC.*

U. S. Department of Agriculture Weather Bureau. C. F. Marvin, Chief.
Monthly Meteorological Summary, Los Angeles, for May, 1915.

Date	Temp. Highest	Temp. Lowest	Temp. Mean	Precipitation (Inches)	Character of Day	P. ct. pos. sunshine	This month since 1877 Year	Mean Temp.	Total Precipitation
							1877		
1	55	41	48	.03	Cloudy...	31	1878	63	0.66
2	55	44	50	.54	Cloudy...	13	1879	62	0.24
3	65	48	56	.00	Pt. Cldy.	67	1880	65	0.04
4	61	51	56	.29	Cloudy...	8	1881	64	0.01
5	61	48	54	.00	Pt. Cldy.	37	1882	64	0.63
6	63	52	58	.00	Cloudy...	13	1883	64	2.02
7	65	54	60	.00	Pt. Cldy.	54	1884	64	0.35
8	69	53	61	T.	Pt. Cldy.	57	1885	66	0.06
9	68	54	61	.00	Pt. Cldy.	62	1886	65	0.00
10	70	55	62	.00	Pt. Cldy.	59	1887	65	0.20
11	74	55	64	.00	Clear.....	72	1888	63	0.02
12	74	55	64	.00	Clear.....	80	1889	63	0.62
13	67	55	61	.00	Pt. Cldy.	59	1890	63	0.03
14	69	53	61	.00	Clear.....	100	1891	62	0.31
15	82	57	70	.00	Clear.....	100	1892	62	2.06
16	78	57	68	.00	Pt. Cldy.	81	1893	63	0.06
17	64	54	59	.02	Cloudy...	33	1894	60	0.20
18	70	51	60	.00	Clear.....	79	1895	64	0.19
19	70	51	60	.00	Clear.....	99	1896	63	0.30
20	69	51	60	.00	Clear.....	76	1897	63	0.10
21	70	51	60	.00	Pt. Cldy.	79	1898	60	1.75
22	69	52	60	.00	Pt. Cldy.	69	1899	60	0.04
23	71	51	61	.00	Pt. Cldy.	36	1900	64	1.81
24	68	54	61	.00	Pt. Cldy.	61	1901	60	1.50
25	68	54	61	.00	Pt. Cldy.	68	1902	61	0.03
26	77	54	66	.00	Clear.....	87	1903	61	T
27	95	64	80	.00	Clear.....	100	1904	62	T
28	85	59	72	.00	Pt. Cldy.	91	1905	61	0.95
29	69	59	64	.00	Cloudy...	9	1906	60	1.02
30	71	58	64	.00	Pt. Cldy.	65	1907	61	0.07
31	72	55	64	.00	Pt. Cldy.	60	1908	60	0.25
							1909	60	0.00
							1910	63	0.00
							1911	61	0.02
							1912	63	0.12
							1913	61	0.05
							1914	60	0.43
							1915	62	0.88

Mean highest temp. 69.7
Mean lowest temp. 53.2
Mean temp. for month... 61.5
Total inches of precipitation during this month 0.88

Summary

Barometer.
Mean, 29.91 inches; highest, 30.14 inches, 9th; lowest, 29.66 inches, 28th.

Temperature.
Highest 95, on 27th; lowest 41, on the 1st; greatest daily range 31, on 27th; least, 10, on the 4th; normal for this month, 62.5; absolute highest this month for 38 years, 103, (25th, 1896); lowest, 40, (16th, 1883); average daily deficiency of this month as compared with normal, 0.1; accumulated excess since January 1, 184.

Precipitation.
Total for this month, 0.88; snowfall, 0; greatest precipitation, 24 hrs., 0.57, 1st-2d; normal for this month 0.48; total for September 1, 1914 to date, 17.04; normal from Sept. 1 to date, 15.57; excess from Sept. 1, 1914 to date, 1.47; average seasonal (37 years) 15.55.

Wind
Prevailing direction, SW; total movement, 4,732 miles; average hourly velocity, 6.3 miles; maximum velocity (for 5 mins.), 28 miles per hour, from NW. on 19th.

Weather.
Number of clear days, 9; partly cloudy, 16; cloudy, 6; on which .01 inch, or more, rainfall occurred, 4.
Mean mthly. rel. humidity, 74 p. ct.

Sunshine.
Number hrs. actual sunshine, 265.2
Number hrs. possible 432.1
Percentage of possible..... 61

Phenomena.	Dates.
Auroras	0
Solar Halos	3
Lunar Halos	0
Hail	0
Fog, light	10, 11, 12, 23, 31
Fog, dense	23
Thunderstorms	0
Frost, light	0
Frost, heavy	0

Note.—"T" indicates trace of precipitation.
A. W. P. FORD A. CARPENTER.
Form 1030.—Met'l Local Forecaster.
* Physicians may be placed on the mailing list on application to the official in charge of the station from which climatic data are desired.

so that advantage could be taken of railroad routes having low altitudes, warm winter and cool summer weather.

THE SCOPE AND AVAILABILITY OF CLIMATOLOGIC DATA

As to the climatologic work of the bureau we have from the central office of the weather bureau[2] the following data:

Although the 200 regular observing stations, each representing about 15,000 square miles of territory, furnish sufficient data on which to base the various forecasts, observations at many intermediate points are necessary before the climatology of the United States can be properly studied. This need has given rise to the establishment of an important and interesting feature of the Weather Bureau in its Climatological Service, which is divided into 44 local sections, each section, as a rule, covering a single state, and having for its center a regular observing station. These centers each month collect temperature and precipitation observations from more than 4,500 cooperative and other stations, and publish each a monthly and an annual summary, giving a large amount of climatological data for each month and the year.

It is thus seen that the cooperative observers through long periods of temperature and precipitation observations have enabled the bureau to perfect extensive records. In addition to publishing monthly climatologic data in the *Monthly Weather Review* (the first volume was issued with the first of the year 1873) special contributions in climatology and meteorology are published along with the usual profiles, charts and tables. Bulletins prepared by the scientific staff are also issued by the bureau; no less than seventy have been published. One of these bulletins is the incomparable "Climatology of the United States."[3] The eminently practical arrangement and the thoroughness of this volume makes it one to be earnestly recommended to the physician interested in climatic study. A copy of this book will be found in the station library of any weather bureau office. While the local libraries are as complete as circumstances may permit, and form a veritable mine of climatic data, these half a thousand volumes are insignificant when compared with the central office library in Washington with its 32,000 titles in meteorology. This is the largest meteorologic library in existence. It is available to students of meteorology generally, who either consult it personally or through correspondence. This correspondence feature makes it possible to readily consult rare and ordinarily unavailable books.

Local offices of the weather bureau have complete records covering continuous registration of the meteorologic elements. An abstract of these records is issued at all stations of the service on the first day of the month following. One of these summaries is given in Table 2.

In addition to placing the available meteorologic records at the disposal of the applicant, the weather bureau officials throughout the country will be found prompt and courteous in their treatment of applicants for data in person or by correspondence. In many instances they will render unexpectedly valuable aid to the physician in giving him clear and concise data perhaps not comprehended in their official routine, yet none the less accurate and satisfactory. From their technical training they are keen observers and their judgment on climatic matters is free from local prejudice.

SOME POPULAR MISCONCEPTIONS RELATING TO CLIMATE AND HEALTH

Air Pressure Does Not Directly Affect Health.—From the multitude of problems recently presented, the one considering the relationship between air pressure and health appears now to be the most popular. There is considerable misconception regarding this subject occasioned primarily by confusing effect with cause. The mere change in atmospheric pressure from day to

2. The Weather Bureau, 1915, Washington, Govt. Printing Office.

3. Henry: Bull. Q. Climatology of the United States, Washington, 1906.

day has nothing whatever to do with one's physical well-being. The recent publicity given to this subject during the last few months is simply a revival of a myth laid a generation ago by Thomas.[4] For example, in a recent public bulletin it is stated that when the barometer drops from 30 to 29 inches from one day to the next the human body is relieved of half a ton of atmospheric pressure, with resulting depression of spirits, etc. In the first place it is quite unusual for the barometer to drop 1 inch in so short a time, and in the second place experiments have proved that the influence on the body of variations in pressure are greatly overestimated.

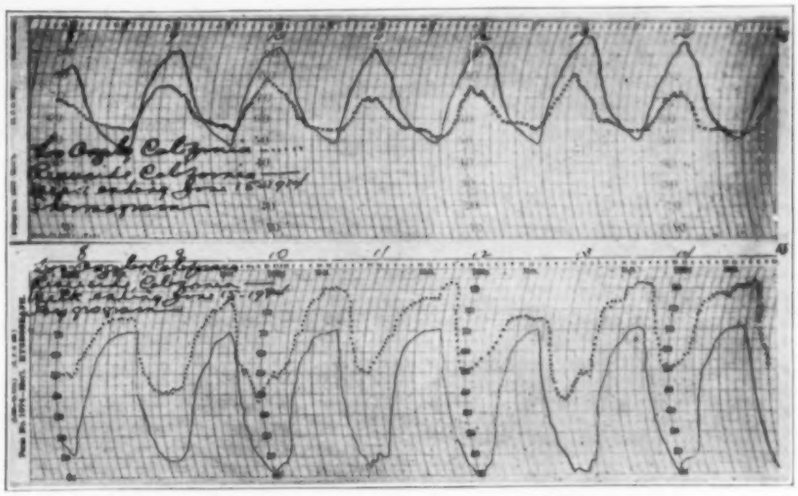

Fig. 2.—Weekly thermograph and hygrograph tracings. Variations in temperature and relative humidity between Los Angeles (10 miles from the sea) and Riverside (65 miles from the sea) for the week ending June 15, 1914.

Hann,[5] in his handbook on climatology translated by Prof. Robert De C. Ward, quotes Thomas and says that in experiments with pneumatic chambers, pressure changes amounting to 300 mm. (over 11 inches in barometric values) a day have been produced without causing any injurious effects on the sick persons concerned in these experiments. Although these experiments were made nearly half a century ago, the pressure myth has persisted, and even this year has found its way into sober-minded periodicals. If a local example is needed to demonstrate further the untenability of the pressure theory, we have only to recall that in Los Angeles, for example, the range of the barometer from day to day averages a tenth of an inch of the mercurial column, equaling the variation experienced when riding in an elevator from the ground floor to the top of office buildings. If there was anything in this theory we would have an "elevator disease" among the elevator conductors who continually experience excessively rapid fluctuations in bodily pressure.

It is rather the fair weather and decreased humidity which accompany rising barometic pressure that elevate one's spirits, or the cloudy threatening weather and increased humidity which accompany a falling barometer that affect the human system. Dr. C. C. Browning[6] noted this when his studies showed that the tuberculous patients became pessimistic and some very unreasonable in their demands during days with little or no sunshine and hopeful of recovery during bright days and moderately low humidity.

Sunshine and Ventilation of More Importance Than Relative Humidity.—I believe that the location of the home or office, the exposure of the living or workroom has much more more to do with the health of the occupant than whether or not the relative humidity is much below or above normal. Exposure to sunshine and ample ventilation are all important. A friend complained of ill health and blamed the humidity of his office room. He said that it was too damp and asked me to investigate. I took my psychrometer and made a series of observations, finding that there was actually less humidity in his private office than out in the street. I studied the situation and eliminated temperature, humidity, air pressure, etc. Then I turned to air movement, and found the ventilation very bad. I suggested a simple air chang-

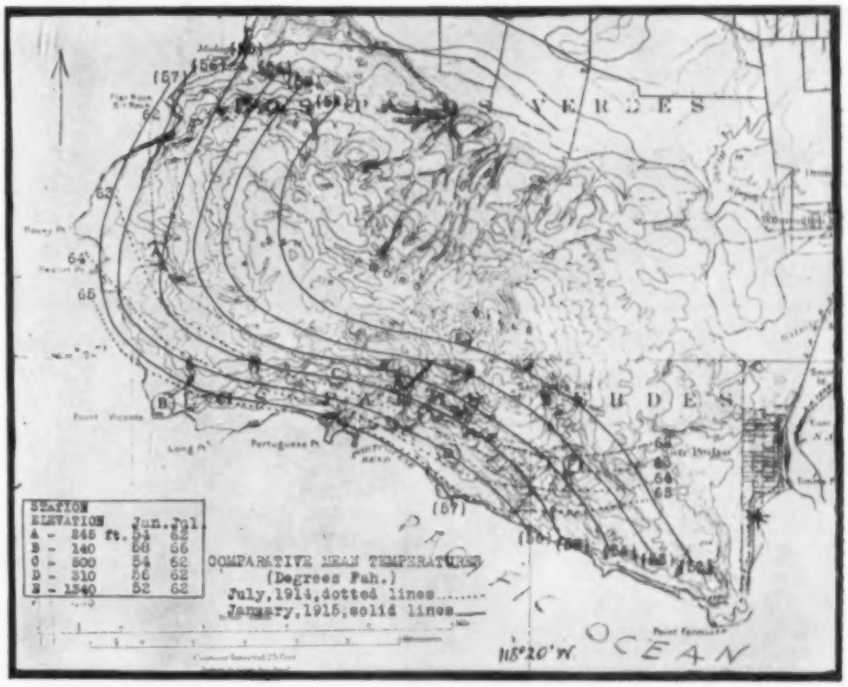

Fig. 3.—Mean temperatures for January and July at Los Palos Verdes, near Los Angeles.

4. Thomas, quoted by Hann: Beitr. z. Allg. Klimatol., Erlangen, 1872.

5. Hann, M. Y.: Beitr. z. Allg. Klimatol., Erlangen, 1872.

6. Browning, C. C.: Tr. Am. Climatol. Assn., 1913, xxix.

ing system and my friend regained his health in a few weeks, and was still enjoying his private office when I last heard from him.

Living Quarters and Air Drainage.—Facing houses with relation to natural air drainage is also a most important point in selecting a home. Many a home, otherwise healthful and satisfactory in every other respect, has been abandoned because the architect and owner did not consider the principles laid down by Hippocrates two thousand years ago.

Dr. Estes Nichols at last year's meeting of this association said in his paper on "Housing and Its Relation to Climate"[7]: "Can any climate rise above its housing conditions? I offer no theories concerning the building of houses, as theories are apt to be overthrown by each succeeding year. I only offer the one fact that has been well established, and that is the vital necessity of plenty of room, as well as plenty of light and air, even to the remotest part of our dwellings."

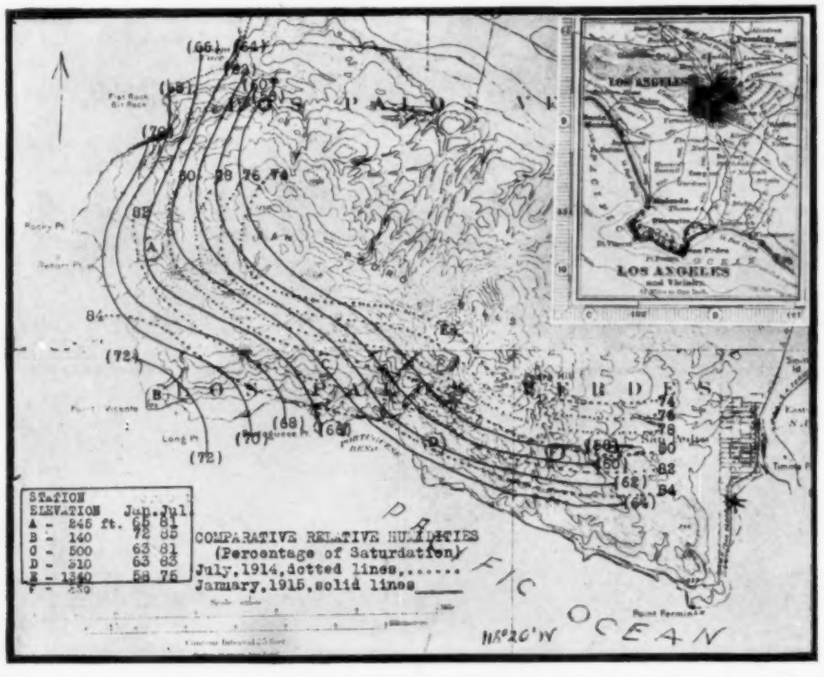

Fig. 4.—Mean relative humidities for January and July, at Los Palos Verdes, near Los Angeles.

PROBLEMS FOR THE CLIMATOLOGIST

Investigation by the Physician.—There are other opportunities for the study of health and its relation to climate, as further transactions of this association show. In the light of augmented data, a few of them might be, for example, the proper selection of sanatorium sites, sensible temperature (wet-bulb thermometer readings) and infant mortality; acute infectious diseases and sunlight (using the sunshine charts of the weather bureau), etc. These are within the scope of the medical profession; the weather bureau, however keenly interested, can assist only with its climatic data.

Intensive Studies by the Climatologist.—There is one phase of the relationship of the physician to the weather bureau in which the balance of proof falls on the weather service, and that is in the matter of intensive climatic investigation. Primarily, owing to the extensive citrus fruit culture in which the United States Department of Agriculture is deeply interested, some of these studies have been taken up in southern California during the past year by the local office of the weather bureau at Los Angeles. Indirectly the mass of data is of much value to the medical profession.

Southern California is about equal in area to Indiana, and within the boundaries of this region may be found all kinds of varieties of healthful weather. This is owing to the mountains, the sea and the desert, as well as the latitude. Scattered over this one portion of California are a dozen stations equipped with thermographs and hygrographs, rain gages, etc. An examination of the curves of temperature and relative humidity as automatically traced is a most interesting study. Two sets of these curves are illustrated in Figure 2. They show simultaneous tracings of temperature and relative humidity during a week in June. One of these stations, Los Angeles, is within 10 miles of the sea and shows lower range in temperature and higher relative humidity, and the other, Riverside, which is 55 miles further east toward the desert, illustrates most clearly the influence of the desert in its range in temperature and low humidity, and above all its remarkably regular oscillations. Such a graphic representation of the diversity of climate within so short a distance would be well-nigh impossible save in southern California.

Intensive Meteorology to the Aid of Colonization and Health.—For the first time in history climatic surveys are being made to determine land values. This is a practical, business-like, commercial application of meteorology to colonization and intensive farming. This climatic survey was begun in June, 1914, on the old Spanish grant of 16,000 acres, the Palos Verdes, which is just south of Los Angeles and between San Pedro (Los Angeles harbor) on the east and Redondo beach on the west. Six complete sets of meteorologic instruments comprising standard thermographs, hygrographs, rain gages, anemometers, and a photographic sunshine recorder were erected at various elevations from 100 to 1,300 feet above the sea, and from the seashore to several miles inland. The readings of these instruments have been plotted and comparative charts of temperature and humidity for January and July are shown in Figures 3 and 4. With such intensive study it is believed possible to chart the climate for every 10-acre plot. The climatic charts will show without error not only proper location of dwellings with relation to air drainage, temperature, humidity, etc., but will give positive information as to soil drainage, and all of this in addition to the all-important agricultural and horticultural feature.

WHAT THE WEATHER BUREAU SHOULD DO FROM A PHYSICIAN'S POINT OF VIEW

In closing this paper I feel that a physician friend who has long practiced medicine in one of the towns in California has clearly stated some of the ways the

7. Nichols, Estes: Tr. Am. Climatol. Assn., xxx, 17.

physician may properly claim the assistance of the weather bureau. This eminent physician says:

I believe the field has been but little explored. We physicians are guilty of many things; among them is guessing. If the U. S. Weather Bureau will prove some of this guessing true or false it will add one more good thing to its past fine record. I think that the time is near at hand when our health officers will be required to be specialists. They will then have the time, the special training and other equipment to go into the subject in conjunction with your bureau and give us some scientific findings. I think the state should be plotted showing the real atmospheric conditions of all localities and showing the influence on the functions of the body. Whether the old east wind of Boston is accountable for all of the vile things charged to it or not nobody really knows, but it should be investigated. That altitude, temperature, humidity, prevailing and unusual winds have much effect on many individuals there is no doubt. The nasal and pulmonary mucous membranes are constantly affected by atmospheric conditions. Locally I have observed that semichronic bronchial coughs that do not yield readily in the city will often clear up in a few hours in the mountains and foothills east of the city. A congested nasal mucous membrane that will kick up a rumpus much of the time in the mountains will disappear promptly at a lower elevation near the coast. Some patients with bronchial asthma that is incurable in the business section of the city will be very comfortable a short distance out of town and in a higher, drier location. Two hot dry days last month have been charged up with some rather serious pulmonary conditions in aged people. These are a few instances of hundreds coming to my mind that I have observed in my years of practice. The subject should be worked out by a union of effort of the Weather Bureau and the medical profession.

U. S. Weather Bureau.

TARDY OR LATE PARALYSIS OF THE ULNAR NERVE

A FORM OF CHRONIC PROGRESSIVE NEURITIS DEVELOPING MANY YEARS AFTER FRACTURE DISLOCATION OF THE ELBOW JOINT

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The type of neuritis which is the subject of this paper is peculiar, in that it develops many years after fractures and dislocations about the elbow joint. For this reason it has been termed "tardy" or "late" paralysis. Usually, the injury to the joint has been received in childhood, the first symptoms of ulnar neuritis making their appearance in adult life. Thus, an interval which may vary from six to thirty-five years elapses between the initial injury and the first symptoms of ulnar neuritis, which are then gradually progressive.

This remarkably long latent period excludes the group of cases, not uncommon, in which secondary paralysis follows redundant callus formation, vicious union, or other mechanical complications of fracture which jeopardize the integrity of neighboring nerve structures.

The curious, and at the same time characteristic, feature of the late paralysis is its appearance so long after reception of the original injury that a direct connection between the two conditions might be open to question, and a natural skepticism as to the etiologic relationship may lead to diagnostic doubts and errors. This is especially true on account of the gradual and progressive atrophy of the small muscles of the hand which is the essential symptom, the sensory disturbance being very slight, or in the earlier stages even absent. Under these circumstances, the possibility of progressive muscular atrophy may be seriously considered, and in one case of my series this diagnosis was made by several neurologists of wide experience and training.

It is of historical interest to note that Duchenne, the great authority on muscular atrophy and of the hand muscles in particular, confessed that he had once diagnosed spinal amyotrophy in such a case, an error which he subsequently recognized and corrected. This little incident of the past, confided to Panas,[1] who first described the condition, will serve to emphasize the special importance of this group of cases from the diagnostic standpoint.

The later literature of the subject will receive consideration in the discussion of the symptomatology.

REPORT OF CASES

CASE 1.—*Fracture of the elbow joint at the age of 5 followed by cubitus valgus and deformity in region of the internal condyle. Thirty-six years later without apparent exciting cause, slow development of ulnar neuritis, with atrophy, pain, paresthesias and disturbance of epicritic sensibility limited to the distribution of the ulnar nerve.*

History.—The patient is a man aged 45, married, and a stock broker by occupation. His wife has had three healthy children; no miscarriages. He is moderate in the use of alcohol and denies syphilis. At the age of 5, he incurred a fracture of the right elbow joint which was treated by the best methods in vogue at that time. The joint never regained complete freedom of movement, flexion remaining somewhat restricted, and the internal line of the arm presenting an angular deformity (cubitus valgus). He played baseball, however, and indulged in most of the athletic exercises of youth. Occasionally, after a strain, he would feel some stiffness and pain in the affected joint, and in later years, these symptoms have been especially conspicuous after cranking an automobile.

Onset.—In the summer of 1912, thirty-six years after the original injury to the elbow joint, he first noticed a slight weakness of the right hand. At that time there was no pain, numbness or tingling of the fingers. The weakness progressed very gradually, and in August, 1913, he experienced an aching pain in the three ulnar fingers of the right hand with numbness. The aching pain was especially localized in the palm of the hand on the ulnar side. The weakness was accompanied by a progressive atrophy of the small muscles of the hand, especially apparent in the first interosseous space. There was often pain and cramping of the muscles of the hand while writing.

Examination.—A strong, robust man of good muscular development. Gait and station are normal. The pupils are equal and react to light and accommodation. There are no tremors, and the tendon reflexes of the upper and lower extremities are equal on the two sides and are of normal intensity. The skin reflexes, abdominal, cremasteric and plantar, are also normal; no Babinski.

The general motor power is normal, save for the right hand, which is weak and atrophic. On holding out the hand there develops the posture typical of ulnar palsy with atrophy of the interossei and hypothenar. The thenar eminence is of normal volume. No fibrillary twitchings are apparent at any time. There is complete paralysis of the muscles of the hypothenar, and marked paresis of the interossei. The adductor pollicis is paralyzed, as is also the palmaris brevis muscle. There is, however, good ulnar flexion of the wrist.

The general sensory examination is normal, except for alterations of the epicritic sensibility in the right ulnar dis-

1. Panas: Sur une cause peu connue de paralysie du nerf cubital, Arch. gén. de méd., 1878, ii, 12.

tribution. There is loss of light tactile impressions over the hypothenar, little finger and adjacent portion of the ring finger of the right hand. The pain sense is preserved in this area, but is more intense and diffused than on the sound side. The temperature sense is normal. There are subjective sensations of pain and tingling in this distribution, but no secretory or trophic manifestations are evident.

Electric stimulation of the ulnar nerve at the elbow joint produces strong contractions of the flexor carpi ulnaris, but less than on the left side. There is, however, no response to either faradic or galvanic currents in the muscles of the hypothenar or the interosseous groups. Direct galvanic stimulation of the hypothenar and interosseous muscles (10 ma.) induces slow contractions, anodal closure contractions greater than cathodal closure contractions (complete reactions of degeneration).

The Elbow Joint: Flexion movements of the elbow joint are somewhat restricted, and there is observed a distinct internal angular deformity (cubitus valgus). Roentgenoscopy reveals an old fracture of the external condyle, together with the resulting cubitus valgus deformity (Fig. 1).

The region of the internal condyle is also deformed, and the ulnar groove is shallow and partially obliterated, so that the nerve occupies a comparatively superficial position. It is about two and a half times the thickness of the normal nerve, and this spindle-like enlargement may be palpated an inch above and below the internal condyle. Pressure on the nerve at this point produces a tingling sensation in the ulnar distribution.

The urine is normal; the Wassermann reaction is negative, and roentgenoscopy of the neck region reveals an absence of cervical ribs.

Comment.—This case is of interest because of the exceedingly long interval of thirty-six years which had elapsed between the injury to the joint and the onset of the first symptoms of ulnar neuritis. This fact, taken in conjunction with the very slight disturbances of sensibility, and the gradual progressive atrophy of the hand muscles, had given rise to serious doubts in the minds of a number of neurologists as to the real nature of the muscular atrophy, so that medical history repeats itself and the same doubts which Duchenne had experienced regarding this type of case finds its counterpart even in these days of neurologic enlightenment.

Fig. 1 (Case 1).—Fracture of the external condyle and valgus deformity of elbow.

The deformity of the elbow joint is of the type most commonly associated with the late paralysis, namely, an ancient fracture of the external condyle with resulting valgus deformity and alteration of the configuration of the ulnar groove. No definite exciting cause could be found to explain the late onset of the neuritis. It appeared mysteriously and progressed insidiously without apparent reason, as is the usual history of these cases.

CASE 2.—*A saleswoman, aged 65, fractured right elbow at the age of 16; fair recovery with insufficient power of flexion. At the age of 55, that is, thirty-nine years after the injury, symptoms of ulnar neuritis appeared and progressed gradually, namely, weakness, atrophy and disturbance of epicritic sensibility limited to the ulnar distribution of the hand. There is cubitus valgus, the ulnar groove is shallow and deformed, and the nerve is thickened.*

History.—The patient is a saleswoman, aged 65, who was referred to me with involution melancholia of ten months' duration. Except for the occasional presence of rheumatoid pains in late years, she had enjoyed excellent health. In childhood the left elbow was fractured, and at the age of 16 she had also fractured the right elbow. The latter injury was followed by marked angular projection of the joint (cubitus valgus) and a restriction of flexion which cannot be carried beyond an angle of 120 degrees. The movements of pronation and supination are well preserved.

For many years she has been saleswoman in a millinery shop; during this period she has done considerable writing, but no special handwork such as sewing or cutting.

Onset: Ten years ago, at the age of 55, she first noticed slight wasting of the muscles of the right hand, which progressed in a very gradual manner. From the beginning there had been slight numbness in the ulnar distribution, but at no time pain, either in the elbow joint or along the course of the nerve.

Examination.—The ulnar nerve on the right side is situated in a shallow groove, and is the seat of fusiform thickening. Pressure causes tingling in the distribution of the nerve, but the nerve trunk itself is quite free and movable.

The atrophy of the hand is distinctly limited to the ulnar distribution, and is most conspicuous in the first interosseous space, and to a lesser degree in the other metacarpal grooves. There is also well-marked atrophy along the ulnar side of the hypothenar eminence and of the adductor pollicis. The wasting is also very apparent on the palmar aspect of the hand. She can extend, fairly well, the distal and middle phalanges of the right hand, but is unable to separate or approximate the little or ring fingers, or flex the basal phalanges. There is slight power of contraction in the abductor minimi digiti. Adduction of the thumb is lost, as is also the function of the palmaris brevis. There is good ulnar flexion of the wrist.

Sensory examination shows a loss of epicritic sensibility to light tactile impressions, in the digital distribution of the ulnar nerve. The sensations of deep pain and extremes of temperature are normal. There are no trophic or secretory disturbances.

Electric Examination: There is no muscle response to galvanic or faradic stimulation of the ulnar nerve at the elbow, except ulnar flexion of the wrist. The intrinsic muscles of the hand supplied by the ulnar do not react to strong faradic currents, while strong galvanic currents produce vermicular response with reversal of the poles (reactions of degeneration).

Roentgen Examination (Dr. A. H. Busby): Any evidences of early bone injury to the right elbow joint are confused by the changes of osteo-arthritis which are present. There is considerable hypertrophied bone in the region of the internal condyle and head of the radius (Fig. 2). The left elbow joint shows old fracture of the external condyle, with moderate amount of callus formation. There are evidences of hypertrophic osteo-arthritis on the internal condyle and head of the radius. Slight evidences of osteo-arthritis are also present on some of the bones of the wrist and hand.

The general neurologic examination is negative. Pupils react normally and the tendon and skin reflexes are normal. Save for the atrophy of the right ulnar distribution, the musculature is well developed and of good power. No fibrillary twitchings are noted at any time. The urine is free from albumin and sugar.

Comment.—This case presents the characteristic history and course of the tardy ulnar palsy. Unusual is the

extremely long latent interval (thirty-nine years) which separates the original injury and the first symptoms of ulnar palsy. Otherwise, the clinical picture corresponds to the usual type, namely, cubitus valgus, a deformed and shallow ulnar groove with fusiform thickening of the superjacent nerve trunk, and the insidious development of progressive neuritis, with preponderance of motor symptoms. In such a case, a knowledge of the symptomatology of tardy ulnar palsy is of especial importance in the differentiation of spinal amyotrophy. It is possible that the lesions of osteo-arthritis, which were also present, may have facilitated the production of the ulnar neuritis.

CASE 3.—*Fracture of the elbow joint at the age of 16. Six years later, gradual development of ulnar neuritis with atrophic paralysis and epicritic anesthesia. Palpation shows cystlike tumor in the ulnar groove associated with enlargement and deformity of the internal condyle. Operation, with removal of a cyst. Pathologic diagnosis, chronic bursitis.*

History.—The patient is 21 years of age, single and a journalist by occupation. He is moderate in the use of alcohol, and has had no venereal infection. At the age of 15, he fell from a horse and fractured the left elbow joint. This was a simple fracture and the arm was fixed in flexion. After removal of the splint, the joint was stiff for a time, but this gradually improved, and considerable motion was eventually obtained. His recovery was such that he could play baseball and enter into other sports of similar nature. At times, however, particularly after sudden and violent movements of the arm, he experienced pain and a little stiffness in the joint, but never any symptoms which would indicate pressure on or involvement of the ulnar nerve trunk.

Onset: In January, 1911, six years after the original injury to the elbow joint, he first noted the wasting of the small muscles of the left hand. This was accompanied by a numb pain in the cutaneous distribution of the ulnar nerve. The atrophy and weakness gradually increased. In September, 1911, he consulted Dr. George Woolsey, who referred him to me for examination.

Examination.—Sept. 11, 1911, there is pronounced weakness and atrophy of the intrinsic muscles of the left hand supplied by the ulnar nerve, namely, the hypothenar eminence and the interossei, including the adductor pollicis. The muscles of the forearm are not atrophied, and no fibrillary twitchings are visible.

Fig. 2 (Case 2). — Valgus deformity of elbow and evidences of bone hypertrophy, in part osteo-arthritic.

On extending the hand and fingers, the little and ring fingers remain continuously somewhat flexed, and scarcely any movements of separation or apposition are possible. The ulnar flexion of the wrist is not diminished, and all the other movements of the left upper extremity, including those of the thenar eminence, are perfectly normal.

Sensation: The epicritic sensibility to light touch is lost over the little finger and adjacent portion of the ring finger in the ulnar distribution. The protopathic sensibility, pain and extremes of heat and cold are preserved in this area, and there are corresponding sensations of pain and paresthesias.

The movements of the elbow joint are free, except for extension, which is somewhat limited; pronation and supination are normal. The internal condyle is enlarged and is displaced from its normal position. The nerve is palpable in the ulnar groove, and beneath it is distinguished a small cystlike swelling. Pressure produces characteristic tingling in the course of the nerve. A general physical and neurologic examination is otherwise negative.

Electric examination shows reactions of degeneration in the atrophied muscles of the hand innervated by the ulnar nerve.

Operation.—This was performed by Dr. Woolsey, Oct. 17, 1911, ten months after the onset of neuritis. A longitudinal incision was made over the olecranon which exposed a firm cystic tumor the size of a hazelnut beneath the ulnar nerve, compressing and pushing it forward. During the dissection, this cystic formation burst and discharged a yellow gelatinous fluid. The walls of the cyst were smooth, and there was no evident communication with the joint. It was apparently a hernia from the joint synovial membrane which had been constricted. Two minute daughter cysts lay beside the principal one. The nerve was somewhat flattened by pressure, but otherwise was not injured. The wound was closed and healed without accident. The pathologic report of the cyst wall was chronic bursitis.

Note: February, 1915, Dr. H. J. Wynkoop, the family physician, reported that recovery of function was complete and there had been no recurrence of ulnar nerve symptoms.

Comment.—The chief interest of this case is the etiologic factor, namely, a small localized cystic tumor originating from the synovial membrane of the joint and compressing the nerve which passed over it. The possibility of such a complication should be considered in cases of late paralysis and its relief by surgical intervention. Not only was there a cyst beneath the nerve, but also the internal condyle was deformed and enlarged, as in so many of these cases, and this may have been a contributory cause in the production of the palsy.

GENERAL REMARKS

These cases illustrate very well the nature of the various joint lesions, the long interval of latency and the general course and symptomatology of the ulnar neuritis in this group of late palsies. As has been previously emphasized, the special and characteristic feature is the long period of time which separates the two phases of the clinical picture, the early injury and the late neuritis.

Another rather curious fact is the special predisposition of the ulnar nerve to this form of palsy; and while it has been observed in the median nerve in one case, in combination with ulnar neuritis (Bernhardt[2]) it is so rare in that distribution as to constitute a clinical curiosity and not a definite clinical type. In other nerve distributions, so far as I am aware, it does not occur.

In the case just mentioned recorded by Bernhardt, a woman aged 42 developed atrophy with disturbances of sensibility in the median nerve distribution of the hand, thirty years after an injury of the elbow joint received in childhood, which resulted in a fracture of the head of the radius, cubitus valgus, and callus formation about the internal condyle. In this patient, who was a cook, there were also distinct evidences of ulnar nerve involvement, and in view of the great rarity of late neuritis of the median under these circumstances, it is quite possible that the ulnar paresis, by throwing an additional strain on the thenar region, had produced a true occupation neuritis of the median

2. Bernhardt: Ueber Medianus Lähmung als spät Folge einer Ellenbogen Gelenk Verletzung, Neurol. Centralbl., 1910, xxix, 178.

nerve, which complication was therefore not a direct result of the joint lesion. A similar combination of ulnar and median neuritis, in a carpenter, aged 69, with an ancient fracture of the elbow joint, has also been recorded by Huet.[3] He regarded the condition as an occupation or professional neuritis and not directly related to the old joint lesion.

SYMPTOMATOLOGY

The late neuritis of the ulnar nerve does not differ in symptomatology from other forms of progressive neuritis. As is usual in compression, the motor nerves are more vulnerable than the sensory fibers, motor symptoms dominating the clinical picture and often preceding any evidence of sensory involvement. Usually there is an atrophic paralysis of gradual development with changes in the electrical excitability corresponding to the degree and duration of the muscle degeneration. The sensory symptoms, both subjective and objective, may be very slight, and when present are typically neural in distribution. Even in advanced cases, the anesthesia is of the epicritic type, the protopathic sensibility being well preserved. In the absence of pain, this scarcely perceptible disturbance of tactile sensibility may be overlooked and lead to the suspicion of progressive muscular atrophy, more especially as the wasting of the small muscles of the hand is slowly progressive.

Here, however, the absence of fibrillary twitchings and the strict limitation of atrophy to the ulnar nerve distribution, together with the disturbances of sensibility, should be sufficient to remove all doubt and make the diagnosis clear.

In the diagnostic differentiation, it may be well to recall the *hypothenar type of neural hand atrophy* from chronic pressure neuritis of the deep palmar branch of the ulnar nerve.[4] This branch of the nerve is *purely motor,* and the resulting atrophy is strictly limited to the small muscles of the hand supplied by the ulnar nerve. In this type, as in the tardy paralysis, the course may be slowly progressive; and with the absence of all sensory symptoms, both subjective and objective, a clinical picture is produced which may closely resemble an early stage of progressive muscular atrophy. Attention, however, to the strictly neural distribution of the atrophic paralysis and the absence of fibrillary tremors will serve to make the diagnosis clear.

ETIOLOGY

The essential etiologic factor in these cases is the deformity and malposition of the elbow joint, usually the result of fracture-dislocations in early life. The most frequent deformity is the cubitus valgus, which in many cases is associated with evidences of old fracture of the external condyle of the humerus. Mouchet,[5] in particular, has emphasized this combination of lesions.

In the cases with valgus deformity, there is also some dislocation of the structures forming the ulnar groove, the olecranon is often displaced inward, and the bony channel between it and the condyle is shallower than normal. As a result, there is produced an alteration in the course and bony relationship of the ulnar nerve in this region.

Another frequent deformity concerns the internal condyle, which may be displaced or united in bad position with callus formation, thus impairing the relationships in the ulnar groove.

It is of interest that tardy paralysis may also follow deformity of the elbow joint from old arthritis. In a case of this kind recorded by Webber,[6] the elbow was ankylosed in semiflexion and the ulnar groove almost obliterated. In a similar case described by Sherren,[7] old arthritis had followed measles terminating in marked valgus deformity. It is very evident in the arthritic cases, as in fractures, dislocations and epiphyseal separations, that deformity of the ulnar groove and cubitus valgus play the important rôle.

THE ULNAR NERVE

Usually the nerve is perfectly free and movable in its shallow or partially obliterated bony groove, and is the seat of a fusiform swelling. This spindle-shaped tumefaction of the nerve is from 2 to 3 inches long, its central portion corresponding in a general way to the tip of the olecranon.

In Murphy's[8] case a small osteomalike growth was found beneath the nerve, and in Case 3 of my series, a small cystic tumor. Such findings, however, are rare and usually there is only the fusiform thickening of the nerve in its shallow groove, associated with valgus deformity of the joint.

In two of the recorded cases in which the diseased portion of the nerve had been excised during surgical intervention (Sherren[7]), microscopic studies showed the presence of an interstitial neuritis with irregular areas of sclerosis in the perineurium and endoneurium. In the sclerosed patches there was well-marked atrophy of the nerve fibers.

PERIOD OF LATENCY

The peculiar and unusual feature of this group of cases is the long interval of time elapsing between the original injury and the development of the first symptoms of ulnar neuritis. This may range all the way from six to thirty-five years. In one of my cases, thirty-nine years elapsed before the atrophy of the hand muscles became apparent. The reasons for this long delay are not definitely known.

It has, however, been pointed out that a similar interval is usually present in cases of cervical rib, which, although a congenital deformity, usually gives rise to no symptoms until adult life. It is not unlikely that with the increase of connective tissue in later life, not only is there greater susceptibility to irritative lesions, but also the nerve structures are themselves less elastic and do not take so kindly to mild chronic irritative traumas, as in early life. The very vagueness of these explanations only emphasizes our real lack of knowledge as to the underlying factors. That it is a mechanical and irritative reaction cannot be doubted. So much is clear from the localization of the neuritic process and the corresponding joint changes.

Elsewhere, I have described[9] a *neural type of thenar atrophy* from compression neuritis of the small thenar branch of the median nerve, as it emerges from beneath the anterior annular ligament of the wrist.

3. Huet: Neurites professionelles du nerf median et du nerf cubital chez un ouvrier menuisier porteur d'une ancienne fracture du coude, Arch. de Neurol., 1900, ix, Series 2, p. 531.
4. Hunt, Ramsay: The Thenar and Hypothenar Types of Neural Atrophy of the Hand, Am. Jour. Med. Sc., February, 1911.
5. Mouchet: Paralysie tardive du nerf cubital a la suite des fractures du condyle externe de l'humérus, Jour. de chir., 1914, xii, 437.
6. Webber: Zur Etiologie peripheralen Ulnaris und Medianus Lähmungen, Deutsch. Ztschr. f. Nervenh., 1899, xv, 18.
7. Sherren: Chronic Neuritis of the Ulnar Nerve Due to Deformity in the Region of the Elbow Joint, Edinburgh Med. Jour., 1908, xxiii, 500.
8. Murphy, J. B.: Neuroma of Ulnar Neuritis, the Result of Trauma Incident to Fracture at the Elbow Joint, Clinics, 1914, iii, No. 2.
9. Hunt, J. Ramsay: The Neural Atrophy of the Muscles of the Hand, Without Sensory Disturbances, Rev. Neurol. and Psych., 1914, xii, 137.

In this group of cases, an occupation may have been carried out for many years without untoward symptoms, when without apparent exciting cause the muscles of the thumb begin gradually to waste. It is very probable that we have here a somewhat similar pathologic tendency, that is, a greater susceptibility to connective tissue irritation in later life with less resistance on the part of nerve tissue. In a case of thenar atrophy of this type, Marie and Foix were able to demonstrate a small nodule of chronic neuritis, just where the nerve passes under the edge of the anterior annular ligament.

In certain cases, some change of occupation or other exciting cause has been suggested in possible explanation of the tardy paralysis. Such explanations, however, are by no means susceptible of general application, and as a rule there has been nothing of this nature to explain the occurrence of the palsy after the long latent interval. It usually appears in early adult or middle life, quite spontaneously and without apparent exciting cause.

TREATMENT

It would appear that, after the neuritis has once been established, it is likely to progress slowly and steadily unless the mechanical irritation is relieved by some form of surgical intervention. In one of my patients the condition had been slowly progressing over a period of ten years, and yet a physician had never been consulted, and her efficiency as saleswoman was not impaired. A case of this character naturally does not take kindly to the suggestion of operation. No doubt, something might be accomplished by massage and electric treatment under these circumstances. The prospect of cure or even of delaying the progress of the malady would be very slight with such measures, which should, therefore, be regarded as merely temporizing or palliative in nature.

In those cases in which a cystic tumor or growth of bone is compressing the nerve, the surgical indication is clear. When the ulnar groove is deformed and shallow, it may be necessary to enlarge and deepen it by surgical means. This has been done in a number of cases, in some with good results.

The nerve has also been transposed by carrying it forward and attaching it to the anterior surface of the internal condyle, thus relieving the mechanical strain to which it is necessarily subjected in a shallow ulnar groove.

Sherren[7] has also excised the thickened portion of the nerve with restoration of the anatomic continuity, in one case with good results. By this procedure alone there is nothing to prevent a return of the neuritis, and its value as a surgical method would seem doubtful.

In an arthritic case Sherren performed an excision of the elbow joint with fair restoration of neural function.

The most pretentious surgical procedure has been devised by Mouchet,[5] and is especially advocated by the French school. This consists of a supracondyloid cuneiform osteotomy of the lower end of the humerus, at the same time deepening and enlarging the ulnar groove. By this method the vicious mechanical factors are eliminated, and it is probably the operation of choice in certain cases.

CONCLUSIONS

The tardy or late paralysis of the ulnar nerve is a well-defined clinical type of chronic interstitial neuritis, consequent on old injuries and deformities about the elbow joint.

The interval of time elapsing between the reception of the original joint lesion and the onset of neuritic symptoms may vary from six to thirty-nine years.

During this latent period there are no symptoms other than those referable to the deformity and restricted movements of the elbow joint.

The joint lesions most commonly associated with this form of neuritis are those resulting from old fractures and dislocations about the elbow joint, and very rarely old arthritis.

Especially frequent is the fracture of the external condyle with cubitus valgus and alterations in the configuration of the ulnar groove.

The neuritic symptoms are slowly progressive and run an extremely chronic course. They consist of atrophic paralysis limited to the ulnar distribution with corresponding sensory disturbances. The sensory symtoms, both subjective and objective, may be insignificant and in the earlier stages even absent.

The diagnosis rests on the presence of an old joint lesion and the neuritic character of the symptoms. In differential diagnosis the progressive spinal atrophies and the *hypothenar type of neural atrophy* (compression neuritis of the deep palmar branch of the ulnar) will demand consideration.

Surgical measures are usually necessary to check the progress of the atrophy and restore function. Among the procedures advocated in the different types of cases are: enlargement and remodeling of the ulnar groove; resection of the thickened portion of the nerve trunk; transposition of the ulnar nerve to the anterior surface of the internal condyle, and supracondyloid cuneiform osteotomy of the humerus to correct the valgus deformity.

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HYPERTRICHOSIS, VARIATIONS IN FEMALE SECONDARY SEXUAL CHARACTERISTICS, AND INTERNAL SECRETIONS *

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Recently on the gynecologic service of Dr. L. E. Frankenthal, at Michael Reese Hospital, we observed a marked case of hypertrichosis, and it is with the intent of determining the connection between abnormal hair development and genital changes that this paper is written.

History.—The patient, Mrs. E. S., Russian, married, aged 63, was admitted to the hospital complaining of pain in the right lower quadrant of the abdomen. Since the age of 10 she had experienced this dull intermittent pain at intervals of a week or two. It radiated to the groin and down the thigh, lasting three or four hours at a time, and was always independent of gastro-intestinal and urinary disturbances. She stated that her menstruation, appearing from two to four months' intervals, always intensified her pain.

Her first confinement (normal) occurred at the age of 19, and was followed in two years by a second, which was likewise normal. Since then the abdominal pain has been continuous and of a dragging nature. She visited a gynecologic clinic in Vienna, where a diagnosis of ovarian tumor was made (its nature unknown to her).

* From Michael Reese Hospital.

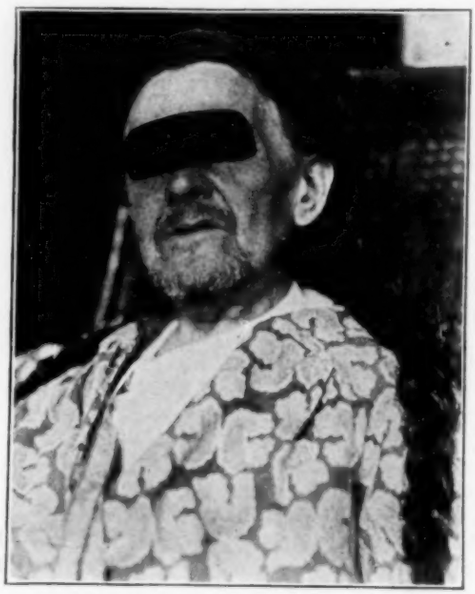
About this time she noticed an increased growth of hair on the upper lip. Four years later a beard developed, and she was accustomed to shave about every week. There were never any other hypertrichotic changes noticed. The family history reveals a similar condition in a daughter, aged 43, who has observed an increased growth of hair on the upper lip for the past thirteen years.

Examination.—There was an excessive growth of grayish hair on the upper lip and chin, and a moderate increase on the cheeks. No other anomalies of hair development were present. The individual hairs, thickly set, were of coarse, bristly character and measure from 1 to 1.5 cm. in length.

Bimanually a firm mass was felt in the right pelvis, but it was impossible to define accurately its connections because of the accompanying excessive ascites. Remainder of examination was practically negative. A probable diagnosis of ovarian cyst was made and operation decided on, for the increasing pain, nausea, pulse of 120, and temperature of 101.6 were regarded as symptoms of a twisted pedicle.

Operation and Result.—Under nitrous oxid anesthesia a suprapubic incision was made, and, after allowing approximately 3 liters of thin yellowish fluid to escape, a bilobed tumor mass about the size of a fetal head was found. The lower lobe occupied the right pelvis, while the other was situated in the right lower quadrant of the abdomen and was attached to the lateral wall. The mass was found to arise from the right ovary. The pedicle was clamped and cut and the tumor removed. Before closing the abdomen it was noticed that everywhere on the peritoneum and intestines were present irregularly shaped, slightly raised whitish areas which were considered as malignant changes, a pathologic condition which accounted for the secondary ascites. The patient made a slow but uneventful recovery.

The boggy tumor was covered by connective tissue and lined by ciliated columnar epithelium. Within was a thick, viscid, brownish, semifluid substance containing grayish hair and some whitish flakes similar to those found at times in amniotic fluid. No bone or nails were found. A pathologic diagnosis of dermoid cyst was made.



Patient with marked facial hypertrichosis.

The observation that abnormal hair development associated with anomalies of menstruation dates back to ancient times, and while with advancing years it was fully agreed that such a connection does exist, it has not been until recent times that an effort was made to determine just what the nature of this association is. Scheuer's[1] observations on twenty-five women showing hypertrichosis illustrate this point nicely, for fifteen had amenorrhea, six had dysmenorrhea, and four showed metrorrhagia.

A few introductory remarks may be of worth regarding the growth of hair, which, according to Scheuer, develops in three stages, namely, the woolly, the children's and the terminal.

Excepting those places (palms and soles) which remain hairless throughout life, there develops during fetal life over the entire body the woolly hair which is marked by its soft texture and lanugo character. In addition to the former a growth of thick, coarse pigmented hair develops on the head and eyebrows at about the eighth month of intra-uterine life. So at birth children's hair is marked by irregularities in growth, displaying a general lanugo development with localized coarse additions. This children's hair retains its purity until puberty, when in males the terminal hairs develop in the axilla and on the pubis, cheeks, lips and chin. In the female, however, terminal hair is confined to the axilla and pubis, the remainder being of the childish character. Thus it is in women that deviations of hair formation must be considered pathologic, for the nonappearance of terminal hair shows a persistence of childish characteristics, and an excessive amount, resembling the male type, represents a local hermaphroditism or hypertrichosis.

As the development of terminal hair occurs at the time of sexual ripening, it is but natural to think of a connection between the two. So Friedenthal believes that waste products of metabolic activity of the sex glands have an effect on the growth of the terminal hair. Ikeli states that catabolic products, circulating in the blood shortly before the time of sexual ripening, reach the skin and there call forth the growth of hair. Still, as Scheuer says, while theories are numerous little is really known, but it appears probable that the glands of internal secretion have an intimate connection with these phenomena.

Thus the ripening of the sex glands has been generally accepted as being the cause of the appearance of secondary sexual characteristics. This view applies primarily to the changes at the time of normal puberty, but in addition pertains to cases of premature development, as was noted by Lesser[2] (case of well-developed patient aged 6 who menstruated first at her third year); by Glynn[3] (hypernephromas in children), and by others. Halban,[4] however, from his observations on cases of aplasia of the sex glands and in hermaphroditism, has come to an opposite conclusion, that is, that the existence of secondary sexual characteristics is not connected with the presence of homologous sex glands. Rather, he says, we must assume that the same factor or factors which determine sex must in a similar way be responsible for the formation of the primary and secondary sex characteristics. Von Lenhossek[5] takes a similar though less positive view, namely, that secondary sex characteristics are deeply founded and develop according to inherited laws; but, nevertheless, for the complete formation of these characteristics, the corresponding sex glands have a so-called protective action. In this sense a well-functioning testicle is important for the growth of terminal hair on the face, and a well-functioning ovary is important for the limitation of such hair to the

1. Scheuer: Hautkrankheiten sexuellen Ursprungs bei Frauen, 1912.

2. Lesser: Ztschr. f. klin. Med., 1900, xli, 122.
3. Glynn, F.: Quart. Jour. Med., 1912, v, 157.
4. Halban, quoted by Cohn, F.: Monatschr. f. Geburtsh. u. Gynäk., 1913, xxxviii, 93.
5. Quoted by Scheuer (Footnote 1).

axilla and pubis. Conversely, we see cases of retarded development of secondary characteristics when the testicles are either poorly developed or poorly functioning. Also, when the ovarian function is at a low ebb, as in sterile women, women at the menopause, and in women whose menstruation is imperfect, we see hypertrichotic changes due to a derangement of the protective action of the ovarian secretion. So the views of von Lenhossek are a matter of not uncommon observation. Why men should have a facial growth of terminal hair, and why in women it is normally restricted to the axilla and pubis are attributed by Darwin through evolutionary changes to sexual selection.

The older view, that secondary sexual characteristics are due to the ripening of the sex glands, is tenable for the reason that in practically all cases such changes develop normally. This theory, however, cannot be accepted in toto, for, after Halban's reports on cases of aplasia of the sex glands, we see that there must necessarily be other factors concerned. Von Lenhossek's views also seem quite plausible that sex characteristics develop after deeply founded inherited laws. Still, while accepting the reasonable view of hereditary influence, it seems more probable with our present knowledge that derangements of the glands of internal secretion play a large part; for it is now well known that glandular changes, as suprarenal and pineal neoplasias, occasion or at least are closely connected with the development of sexual characteristics.

Deviations from the normal female sex characteristics will now be considered especially as regards abnormal hair development.

Among the earliest causative factors of hypertrichosis were mentioned uterine reflex, pelvic disease, irritation, congenital anomalies and heredity. As examples of congenital anomalies are uterus duplex (Hegar[6]), uterus unicornis (Freund[7]), uterus infantilis (Hilbert[8]), and infantile pelvis (Hildebrand[9]). Of course we now know that such conditions are concomitant features rather than causative factors. Heredity, however, must be taken into consideration, for Lesser[5] reports three cases (in sisters) all of which showed distinct hypertrichosis.

Next were reported cases whose causation was attributed solely to ovarian changes, as bilateral cystic ovaries (Röten[5]), ovarian tumor (Alberti[9]), and enlarged ovary (Lesser[10]). Soon, however, cases with an entirely different etiology were recorded, namely, hyperplasia of the suprarenal (Bortz[5]), pineal tumor (von Frankl-Hochwart[5]) and hypophysial tumor (Hochenegg[5]). Thus it is, as Scheuer says, that our ideas must be modified and derangements of the glands of internal secretion be considered as factors in the etiology of hypertrichosis.

The cases of Thumin,[11] Bortz and Goldschwend[5] show that suprarenal changes are intimately connected with abnormal hair formation and genital changes, either wholly or partially as causative factors. Their cases show uterine and ovarian atrophy accompanying hypertrichosis. That the connection between the suprarenal and the genitals is a true one and not one of mere coincidence has been proved by von Theodosieff,[12] who has shown suprarenal hypertrophy subsequent to ovariectomy in dogs. Further, it is also known that the suprarenal is in some way functionally connected with sexual development, for it increases in size during menstruation and in pregnancy; it is decreased in volume when accompanied by defective sexual development, and tumors of it are associated with precocious sexual growth, overgrowth of fat, and with an increased hair formation.

Among the first who devoted their efforts toward determining the association between the suprarenal and the development of sex characteristics, Bullock and Sequeira[13] stand out as pioneers. From their observations they reached the conclusion that the premature development in children of the beard and pubic hair is accompanied by the premature ripening of the sex organs. In such cases they found suprarenal changes either of a hyperplastic or a neoplastic nature, the latter being carcinomas or hypernephromas. In addition they found the reverse to be true, that suprarenal atrophy is associated with defective genitalia and failure of development of the pubic hair. It should be added that they did not invariably find these changes present, for lymphosarcomas were often not accompanied by premature sexual development.

Apert[14] next showed that the manifestations of suprarenal hyperplasia or neoplasia vary with the age at which such changes occur. Thus in infancy he noted hypertrichosis in cases accompanied by a hypertrophied clitoris, a small uterus, and poorly developed ovaries. Up until puberty the triad symptoms were seen — hypertrichosis, adiposity and sexual changes (premature development and precocious puberty). After puberty the cases showed abnormal hair development, adiposity and arrest of menstruation. Late cases were accompanied only by adiposity.

Glynn made similar observations, and found that in children with hypernephromas there is a tendency of the male primary and secondary sexual characteristics to increase at the expense of the female. With males the reverse does not hold true. He advanced a step further and showed that it is the cortex which is so intimately concerned. Glynn also shows that it is the suprarenal involvement per se which occasions the altered features and not the neoplasm, for hypernephromas of the kidney never lead to modified facial changes.

It is now only natural to ask if all cases of corticosuprarenal hypertrophy, benign or malignant, are invariably accompanied by the development of male characteristics and precocious growth in female children. Glynn was able to find only one case not associated with such changes. When hypernephromas occur in adults, before and after the menopause, the changes are of course not so marked as in children, but, as he says, this does not necessarily negative the view that hypernephromas either directly or indirectly occasion such changes; for here as in other pathologic conditions, the same lesions do not invariably produce the same results. Also after the menopause, sex characteristics have become stereotyped through age and so cannot exhibit prominent changes.

Recently Pinard, Launois and Gallais[15] reported a peculiar case of a patient, aged 19, in whom hypertrichosis was accompanied by dystrophy adiposogenitalis similar to the syndrome of Frölich. At necropsy the ovaries, tubes and uterus were small, but the left

6. Hegar: Beitr. z. Geburtsh. u. Gynäk., 1901, iv, 21.
7. Freund: Beitr. z. Geburtsh. u. Gynäk., 1900, iii, 181.
8. Quoted by Hegar (Footnote 6).
9. Alberti: Beitr. z. Geburtsh. u. Gynäk., 1905, ix, 339.
10. Lesser: Lehrbuch der Haut- und Geschechtskrankheiten.
11. Thumin: Berl. klin. Wchnschr., 1909, xlvi, 103.
12. Quoted by Thumin (Footnote 11) and by Scheuer (Footnote 1).
13. Quoted by Glynn (Footnote 3).
14. Apert: Bull. méd., Paris, 1910, xxiv, 1161.
15. Pinard, Launois and Gallais: Gaz. d. hôp., Paris, 1911, lxxiv, 649.

suprarenal was involved by a large epithelioma. The pituitary was normal, thus excluding the possible hypophysial origin of the genital dystrophy. So here we have a case of suprarenal neoplasia exhibiting marked genital changes after the age of puberty, thus differing from the usual types as described by Apert and Glynn.

Now that it has been shown that a connection does exist between the corticosuprarenal hyperplasia and the sex glands, it may be asked, What is the primary cause of altered sexual characteristics? Are the suprarenal hyperplasias the primary cause? Do the sexual changes occasion the former? Or do both arise from a common origin?

On this point there is naturally a diversity of opinion varying between a suprarenal and an ovarian primary etiologic factor. Goldschwend believes that the development of secondary masculine characteristics is due to an excessive suprarenal secretion which overcomes that of the ovary. This theory is tenable because atrophic ovarian changes were found in cases of suprarenal hypertrophy. It is further substantiated by a case reported by Thornton[16] in which excessive hair disappeared after the removal of a suprarenal tumor. Apert holds the same view, for he states that while genital changes are observed in derangements of other glands of internal secretion, hypertrichosis is particularly characterized by accompanying lesions of the suprarenal.

On the opposite side are Scheuer, Hegar and others who believe that in hypertrichosis there is always in the ovary a primary change, for example, atrophy, which leads to secondary changes in the suprarenal and hypophysis, and later to the development of secondary masculine characteristics. Or, as is more plausible, the diseased ovaries are not able to hinder the appearance of these abnormal sex features. This view has an analogous basis in some work of Tandler and Gross,[17] who found experimentally that the interstitial substance of seminiferous tubules seems to occasion the secondary sex characteristics.

The more probable cause is, as Glynn says, a derangement of the glands of internal secretion, for while it is now certain that there exists an intimate connection between sexual characteristics and suprarenal changes, it is further true that other glands are likewise associated and that the real solution will be found only when the interrelationship of these glands is better understood.

Next will be considered the connection between the hypophysis and the genital glands. Tandler and Gross noted in animals an increased hypophysial growth following ovariectomy and an increase during pregnancy due in the latter condition to the multiplication of the chromophobe or clear cells, according to von Bonin.[18] Cushing[19] observed that in dogs, removal of the anterior lobe is often succeeded by shedding of hair, lessening of sexual activity and atrophy of the ovary or testicle. Conversely, hypertrichosis follows anterior lobe hyperplasia.

Thumin, Bychowski[20] and others have observed that in man hypophysial tumors are often accompanied by poorly developed genitals, and that amenorrhea is usually an early symptom of pituitary neoplasm. That such tumors do have an intimate connection with the menstrual cycle is shown by Thumin, Hochenegg and Exner,[5] who report cases in which there was a return of the menses after extirpation of the tumor.

According to Cushing, it is in anterior lobe deficiency that we find such changes as persistence of infantile sexual characteristics when hypophysial neoplasm occurs during childhood, or, in later years a tendency toward the loss of the acquired signs of adolescence. To this same category belongs Frölich's syndrome of dystrophy adiposogenitalis, whose exact etiology is as yet unsettled, as evinced by the numerous theories, as those of Frölich, von Erdheim, B. Fischer, Stumme and Cushing; but, nevertheless, some hypophysial lesion is universally accepted as being the fundamental cause.

As a rule, hypophysial lesions are accompanied by symptoms in direct antithesis to those obtained in suprarenal hypertrophies, as in poorly developed as contrasted with highly developed secondary sexual characteristics, and hypotrichosis rather than hypertrichosis. While, however, the latter is usually true, it is not invariably so, for Hochenegg and Exner observed hypertrichosis in their cases of pituitary neoplasm, and also that the anomaly of hair formation disappeared after operation. Why hypertrichosis appears in some cases of hypophysial lesion and not in others may be explained according to Cushing's theory, which, consisting in a functional differentiation of the two lobes, attributes hypotrichosis to an anterior lobe hyperplasia and hypotrichosis to posterior lobe deficiency.

So while genital changes, usually of a hypoplastic nature, are seen to be occasioned or at least accompanied by hypophysial alterations, the variance in the secondary sexual characteristics here, as with the suprarenal, speaks more not only for an interglandular relationship, but also for some complete relationship between the two lobes of the hypophysis.

From the previously mentioned case (pineal tumor) of von Frankl-Hochwart, we see that the comparatively little thought of pineal gland must have a place in the development of sexual characteristics, for in his patient were noted overdevelopment of the genitalia, sexual precocity and early hair formation. Others have observed similar cases, the tumors being sarcomas, gliomas, teratomas and cystic psammosarcomas.

Kidd,[21] basing his ideas on a review of the literature on the pineal gland, believes that it must have some function and is a metamorphosed rather than a rudimentary organ. To it he ascribes a prepuberal function which consists in the inhibition of premature genital development and sexual characteristics, a function which disappears at the time of sexual ripening, thus allowing the postpuberal changes to develop. If this be true it is then but natural to conclude that the pineal function is decreased and finally nullified by the increase and maturity of the genital secretion. Kidd's ideas are based largely on clinicopathologic observations and are further substantiated by the experimental work of Foa.[22] The latter showed that in chicks, aged from 3 to 5 weeks, there was a premature development of the primary and secondary sexual characteristics succeeding pineal removal. With our experimental knowledge as a foundation, attempts

16. Thornton, cited by Richards, O.: Guy's Hosp. Rep., lix, 217.
17. Tandler and Gross: Wien. klin. Wchnschr., 1910, xx, 459; also quoted by Scheuer (Footnote 1).
18. Von Bonin: Quart. Jour. Med., 1913, vi, 125.
19. Cushing, Harvey: The Hypophysis Cerebri, THE JOURNAL A. M. A., July 17, 1909, p. 249.
20. Bychowski: Deutsch. med. Wchnschr.,
21. Kidd, L. J.: Rev. Neurol. and Psychiat., 1913, xi, 55.
22. Foa: Arch. ital. de biol., Turin, 1914, lxi, 79.

are now being made in some of the Chicago public schools to stimulate the physical and intellectual development of subnormal children by the use of pineal gland extract, but so far no results have been published. Dana and Berkeley, however, working along the same line, have reached the conclusion that pineal gland given early enough leads to increased general, intellectual and sexual growth.

In conclusion, as Kidd says, it is highly probable that there exists some relationship between the pineal gland and secondary sexual characteristics, and that probably a connection exists between it and the pituitary and suprarenal cortex, and possibly with the thyroid, thymus and ovaries.

Ovarian changes, cysts and neoplasms, seem to demonstrate a connection between the ovary and secondary sexual characteristics, as in the cases of Freund and Alberti. These occurred well after puberty and were accompanied by marked hypertrichotic changes; but similar conditions were observed by Lesser in a patient who menstruated first at her third year and who at the fourth developed a strong generalized growth of hair.

While it is seen that altered ovarian states are at times accompanied by abnormal characteristics, such changes as the latter are a rarity, judging from the many cases we see of cystic degeneration and neoplasms; and we must conclude that other glands play a large part in such altered states. What part of the ovary is connected with these deviations is theoretical, but, by analogy, the previously mentioned views of Tandler and Gross may be thought of; or the ideas of McIlroy, who looks on the lutein cells as having the most active influence on the body by reason of their blood pressure raising property.

We now know that the thyroid is closely associated with sexual activity, for in deficient secretion sexual desire is frequently lost, and amenorrhea is often a concomitant symptom. Amenorrhea is also a common sign in increased secretion; so, as with the hypophysis, altered thyroidal secretions are succeeded by a similar menstrual disturbance. Additional evidences of a functional connection are seen by an increased growth of the thyroid gland during puberty, menstruation and pregnancy, a time when heightened sexual activity is present. Regardless of whether it is the altered ovarian secretion which influences the thyroid or vice versa, we have been unable to find, except in cretinism with its infantile genitalia, cases of thyroidal deviations accompanied by the markedly changed sexual characteristics so frequently observed in suprarenal, and, less often, in pineal neoplasms.

The thymus, like the thyroid, does not seem to be so intimately connected with sexual characteristics, but does have some association, as it is persistent in eunuchs. Possibly like the pineal it has a limited prepuberal function.

SUMMARY

From a review of the data, one may ask, What is the fundamental cause leading to those marked variations in sex characteristics? In reply I will say that it is evidently a disturbed pluriglandular equilibrium, for at times we see a suprarenal causation, at others a pineal, and occasionally a hypophysial. According to Falta,[23] these glands form a connected system; therefore it is to be expected that just as is the case in the hematopoietic system, a pathologic system, a pathologic process which becomes established in one part will cause disease to a greater or lesser extent in the other. As he explains it, the internal secretion of one gland reaches another through the circulation, and there either directly increases or inhibits functional activity, or increases or decreases its efficiency; or, again, it reaches the central nervous system, and there produces impulses which indirectly influence the secretory cells. Dennison[24] offers a similar explanation in that the hormones act through the blood on the nervous system, which in turn arranges and distributes impulses to the ductless glands, for example, action of epinephrin on the nervous system.

The function of the suprarenal, pituitary, pineal and thymus act in an inverse proportion to that of the ovary, or, as Dennison says, in a compensatory or synergistic manner. For with hypertrophies of the former we see atrophy of the latter. Thus Goldschwend's case of suprarenal hypersecretion was followed by ovarian atrophy and menstrual cessation, and Thumin's case of bilateral suprarenal involvement was succeeded by similar conditions. The clinical reports of Thumin and Bychowski illustrate the hypophysial relationship. The theories of Biach and Hulles show the pineal association, and the thymic hypertrophy subsequent to castration demonstrates the thymogonadial connection. Such a synergistic action exists not only between the ovary and this group of glands, but also between these glands themselves, for there is a pituitary hypertrophy following thyroidectomy, and acromegaly with suprarenal atrophy.

The thyroid and ovaries, on the other hand, have an antagonistic or neutralizing action on each other, for their functions vary in direct proportion; that is, the thyroid hypertrophies when the ovaries are most active, as in puberty, pregnancy and menstruation.

If we accept such an interrelationship, it is justifiable to assume that the suprarenal is the gland principally concerned with sexual characteristics, the pineal next, and then the hypophysis, ovary, thymus and thyroid, in order of importance. That one functionally imperfect gland alone is unable to produce marked hypertrichotic changes is seen by a case, reported by Pitt, of four suprarenal capsules; by cases of hypophysial lesions, and by numerous cases of ovarian cysts, the great majority of which never are accompanied by hypertrichosis. Rather we must conclude that at the basis must be some profound and complex disturbance of the antagonistic and synergistic pluriglandular equilibrium.

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23. Falta: Am. Jour. Med. Sc., 1909, cxxxvii, 496.

24. Dennison: Colorado Med. Jour., 1912, ix, 65.

Fresh Air and Chronic Laryngeal Stenosis.—An experiment with good results is reported in the bulletin of the New York Department of Health. Eighteen children with chronic laryngeal stenosis, compelled to wear tubes from two to eight years, were sent during the summer from the Willard Parker Hospital to the Otisville tuberculosis sanatorium, where they were given outdoor life on the farm. Physicians and nurses were in constant attendance. None of these children were able to go without the laryngeal tube for more than two months at a time. At the end of the first month in the country all but four children were able to go without tubes, and nearly half gave no evidence of difficulty in respiration. September 25, eighteen of them did not wear tubes. Two months later thirteen were still without tubes and appeared to be cured. The hospital authorities will provide quarters at Otisville for these children, at least during the spring, summer and autumn.

INTRAMUSCULAR INJECTIONS OF WHOLE BLOOD IN THE TREATMENT OF PURPURA HEMORRHAGICA *

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Sixteen hours after the injection of fresh whole blood into the deep muscular tissues of a patient suffering from a severe progressive purpura hemorrhagica, improvement was so marked as to alter the prognosis from doubtful to favorable. Despite the possible *post hoc ergo propter hoc* criticism, it is safe to assume that the sudden change from a persistent marked hematuria of seven days' duration to the passage of a clear urine, and the cessation of hemorrhages into the skin and mucous membranes a few hours after the injection of whole blood, were in this case directly due to the treatment.

The therapy of all forms of blood disease, whether primary — dependent on some inherent fault of the hematopoietic organs, or secondary — dependent on toxic, bacterial or other factors, is still in its infancy. A contribution to any phase of this subject, especially if based on the actual results of treatment as well as on theoretical considerations, should therefore be of value.

Purpura hemorrhagica, or morbus maculosus Werlhofii, has been found to be associated in most cases with a deficiency in the number of platelets in the circulating blood. Whether this "essential thrombopeny" [1] produces the symptoms of the disease, or is itself secondary to some causal agent still unknown, is, of course, the vital issue. Considering the deficiency in blood platelets as the important factor, the rational therapy in purpura hemorrhagica would be to supply to the circulation the lacking element. It is a well-recognized fact in hematology that when a foreign blood is to be supplied, the fresher the injected or transfused blood, the more efficient the results. Administration of the extract of plood platelets[2] (the coagulen of Kocher-Fonio) theoretically fulfils the first requirement, that of supplying the deficient element, but lacks the second requirement, the quality of freshness. Transfusion of blood, by any of the various methods in vogue, fulfils both essentials but requires preliminary agglutination and hemolysis tests. Subcutaneous injection of human serum, rich in platelets, possesses a drawback, in necessitating delay while the blood is standing or centrifugalizing. These disadvantages may be obviated and the same if not more beneficial results expected, in selected cases, by the immediate, subcutaneous or better, intramuscular[3] injections of whole blood. It was because of this line of reasoning, because injection of blood is considered a stimulus to regeneration of thromboplastic substances, because injection of whole blood intramuscularly is so simple and rapid compared with transfusion and other methods, and also because several observers have reported good results with this form of therapy, that it was decided to employ it in the case to be cited, after the ordinary drugs and the usual modes of treatment had failed.

* Read before the Hunterian Medical Society of New York City, Oct. 12, 1915.

1. Frank, E.: Die essentielle Thrombopenie, Berl. klin. Wchnschr., 1915, lii, 425.

2. Halpern, J.: Erfahrungen mit Koagulen (Kocher-Fonio), Beitr. z. klin. Chir., 1915, xcv, 324.

3. Meltzer, J. S., and Auer, J. (The Rate of Absorption from Intramuscular Tissue, Jour. Exper. Med., 1905, vii, 59) showed that absorption from muscle occurred with much greater rapidity than from subcutaneous tissues. Morgenroth and Levy confirmed this observation. (Morgenroth, J., and Levy, R.: Ueber die Resorption des Diphtherieantitoxins, Ztschr. f. Hyg. u. Infectionskr., 1911, lxx, 69).

REPORT OF CASE

History.—The patient, C. S., was a boy, aged 5½ years. The family history was carefully investigated for the existence of a possible blood diathesis; but there had been no purpura, hemophilia or other abnormal blood condition. The previous history of the child was absolutely negative, except for the occurrence of measles, two years before the present illness. There had never been any previous similar complaint or any tendency to prolonged bleeding from a cut or other wound; there had been no nose bleeding, no hematuria, no tendency to bruising of the skin, and no rheumatism.

Present Illness.—The first sign of illness was the appearance of a mild macular eruption on the chest, neck and abdomen of the child, which rash, the mother said, "looked like measles," but which was not accompanied by fever, coryza or malaise. Three days after the onset, there was slight bleeding from the gums. The macular eruption began to fade somewhat in five days, at which time the child was permitted to get out of bed. The next day, after a fall on the knees, the patient developed several large ecchymotic spots, at the site of the trauma. During the next few days, several more ecchymotic spots appeared on the body, and the character of the rash changed from macular to papular and hemorrhagic. There were no rheumatic joint pains, fever or abdominal crises.

Physical Examination.—I saw the patient, for the first time, on the tenth day of his illness. That morning the child had cried out suddenly from pain in the pubic region and then had voided, with considerable distress, a large quantity of almost pure blood. On examination, I found the child covered with petechiae, larger purpuric spots and ecchymoses. There was hardly one square inch of skin which did not show some evidence of the hemorrhagic tendency. The spots seemed to have no particular predilection for the neighborhood of the joints. There were numerous petechiae in the conjunctivae and on the mucous membrane of the mouth. Blood was oozing from the urethra. There were crusts in the nose from previous bleeding. The general condition of the patient was good. There was a slight fever, 100 F., and slight anemia, but no prostration and no distress except when the child voided. On these occasions, which were frequent —every ten or fifteen minutes—the pain was terrific; the little fellow would cry out in distress, and beads of perspiration would roll from his forehead at each jet of pure blood from the urethra. The physical examination was otherwise negative except for a slight murmur over the base of the heart. The spleen was not enlarged. There were no enlarged glands. There were no signs of joint inflammation.

Treatment and Subsequent Course.—After the immediate sedative treatment, the usual remedies reputed to be of benefit in bleeding cases were administered. Calcium lactate in large doses, epinephrin, arsenic and codein were all given a fair trial. Absolute rest in bed, a bland diet, gelatin and an abundance of fresh fruit juices were insisted on.

For a week, expectant treatment was followed. During that time, the general condition of the patient became somewhat worse. The hemorrhages in the skin and mucous membranes increased in number; while a few spots faded, many new ones constantly appeared. The urine, voided very frequently, continued to be full of blood, both fresh and clotted, the hematuria being so marked as to give cause for grave anxiety. At no time were there any other visceral manifestations. There was never any macroscopic or microscopic blood in the feces. There were never any casts in the urine. Ophthalmologic examination failed to reveal any retinal hemorrhages. The hemoglobin fell from 80 to 55; the erythrocytes from 4,200,000 to 3,600,000. The leukocytes numbered 7,200 on one occasion, 6,800 on another. The differential count was normal, the polynuclear cells averaging about 60 per cent.

There was no anisocytosis or poikilocytosis. Certain objections were raised to the frequent taking of blood for thorough and systematic examination of the blood platelets, so that investigation along this line was not attempted. The coagulation time was normal—from five to six minutes. The bleeding time[4] was ten minutes, somewhat beyond the normal limits.

In addition to the drugs mentioned above, coagulen in gram doses was given by mouth, but failed to check the hemorrhagic process. It was not tried subcutaneously or intravenously. Subcutaneous injections of 10, 20 and 30 c.c., respectively, of horse serum were administered without the least evidence of improvement. In the presence of the steady progression of symptoms, despite treatment, it was then decided to adopt a more radical method of therapy.

Injection of Whole, Fresh, Human Blood.—Twenty c.c. of blood were withdrawn by means of a record syringe (lubricated with sterile petrolatum) from the median cephalic vein of a relative whose Wassermann test had been reported negative, and were immediately injected into the gluteal region of the patient. Because of the possibility of clotting within the syringe, the time-saving element became an important factor in the technic; a second needle had been previously inserted into the tissues of the patient; therefore, it was necessary merely to discard the needle used in the withdrawal of blood from the donor, connect the blood-containing syringe with the needle in the tissues of the recipient, and inject. There was not the slightest evidence of clotting in the syringe, after this procedure.

There were no untoward effects, either local or constitutional, as a result of the treatment. About twelve hours after the injection, the urine, which for seven days, had been dark brown, almost black at times, became much lighter in color. Four hours later, that is, sixteen hours after the injection, the child voided urine which, to the eye, was perfectly clear, and which even microscopically contained only a few red blood cells. During the remainder of that day, the urine voided was again smoky, but was much lighter than before the injection. The following day, several clear specimens were voided. From that time, improvement became more and more marked, until at the end of ten days from the date of injection, no specimen, voided at any time during the day, contained even microscopic blood. The improvement in the skin condition, although less striking, was just as steady and as marked. An occasional new crop of petechiae or a fresh ecchymotic spot would appear; but the great majority gradually faded. Attempts to walk or to allow the legs to hang down for any length of time would occasionally produce fresh hemorrhages, but this tendency also gradually disappeared, so that six weeks after the onset of the disease, the patient having had no further blood injections, all evidence of the hemorrhagic diathesis had entirely disappeared.[5]

COMMENT

Whether recovery would have occurred, in this particular instance, under expectant treatment only, is questionable, regardless of the fact that spontaneous cures in this disease are not infrequent. It is not logical to assume that the sudden cessation of the progressive hemorrhagic tendency, a few hours after the treatment as described above, was purely coincidental.

Although not the first time this method has been used successfully, the records of previous trials in this particular disease are rare. In a man aged 20 years, suffering from purpura hemorrhagica, Howard[6] reported good results from the use of whole blood in large amounts. He gave from 28 to 90 c.c. of blood in a series of four injections, over a period of six days, on two occasions employing two donors. Peterson[7] injected 20 c.c. of whole blood in a patient with purpura hemorrhagica, while waiting for the hemolysis and agglutination tests, preliminary to a transfusion by the Lindeman method.[8]

Injection of whole blood has not, by any means, been confined to the treatment of purpura hemorrhagica. Schloss and Commiskey,[9] beginning their studies in 1908, reported good results with this procedure in several cases of hemorrhage of the new-born. Curtis,[10] employing the injection of whole blood especially for uterine hemorrhages, suggests that it should prove of great value in any hemorrhage of moderate severity, where bleeding has not reached the point of exsanguination, and believes that its repeated use in chronic anemias, wasting diseases and infections might prove even more efficient than transfusion. Zingher[11] makes use of convalescent and normal whole blood in the treatment of scarlet fever, and advises its employment in other infections and in blood diseases, and Kaiser[12] reported excellent results in a case of severe erysipelas after the injection of whole blood from a convalescent erysipelas patient. Injections of defibrinated blood have also been used successfully in severe cases of anemia.

Of the other methods reputed to be of benefit in purpura hemorrhagica, subcutaneous injections of coagulen (Kocher-Fonio[2]), of sterilized gelatin, of Witte's peptone,[13] and of animal[14] and human blood serum, intravenous injection of human serum, and transfusion[15] by any of the various methods[16] now in vogue are the most important. Frank[1] employs intravenous injection of large amounts of normal human blood serum. After preliminary tests, from 400 to 500 c.c. of blood from the donor are received in a vessel, covered with enough leech extract to prevent coagulation (10 mg. herudin to 75 c.c. blood), placed on ice or slowly centrifuged, and the plasma drawn and infused into a vein of the patient. This method and transfusion of either ordinary or citrated blood are perhaps the ideal measures when the patient is almost exsanguinated, or when the disease is rapidly progressive and fulminating. But taking into consideration the time and skill required to make preliminary tests as well as to perform the transfusion itself, it would seem most rational to employ first, in every case associated with this blood diathesis, the simple method of intramuscular injection of fresh whole blood, reserving the more complicated methods for emergencies or when several trials of the simpler

4. Duke, W. W.: The Pathogenesis of Purpura Hemorrhagica with Especial Reference to the Part Played by Blood Platelets, Arch. Int. Med., November, 1912, p. 445.

5. At the present date—three months after the cessation of all hemorrhages—the patient is perfectly well, having had no sign of a recurrence.

6. Howard, C. C.: Purpura Hemorrhagica Treated with Subcutaneous Injections of Pure Blood, Kentucky Med. Jour., 1914, xii, 606.

7. Peterson, E. W.: Purpura Hemorrhagica Treated by Blood Transfusion, Post-Graduate, New York, 1914, xxix, 499.

8. Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, a New Method Applicable to Infants and Adults, Am. Jour. Dis. Child., July, 1913, p. 28.

9. Schloss, O. M., and Commiskey, L. J. J.: Spontaneous Hemorrhage in the New-Born. Am. Jour. Dis. Child., April, 1911, p. 276.

10. Curtis, A. H.: The Treatment of Hemorrhage by Injection of Blood, THE JOURNAL A. M. A., Jan. 23, 1915, p. 332.

11. Zingher, Abraham: The Use of Convalescent and Normal Blood in the Treatment of Scarlet Fever, THE JOURNAL A. M. A., Sept. 4, 1915, p. 875; A Simple Syringe Method for the Transfer of Blood from Donor to Recipient, Arch. Pediat., 1914, xxxi, 912.

12. Kaiser, A. D.: Case of Erysipelas Treated with Whole Blood from Convalescent Patient, Arch. Pediat., 1915, xxxii. 519.

13. Osler and McCrae: Modern Medicine, Ed. 2, Philadelphia, Lea & Febiger, 1913, iv, 728.

14. Weil, P. E.: Des injections de sérums sanguin frais dans les états hemorrhagipares, Tribune méd., Paris, Jan. 12, 1907.

15. Ottenberg, R., and Libman, E.: Blood Transfusion, Indications, Results, General Management, Am. Jour. Med. Sc., 1915, cl, 36.

16. Lindeman (Note 8). Weil, Richard: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30, 1915, p. 425. Lewisohn, R.: Blood Transfusion by the Citrate Method, Surg., Gynec. and Obst., 1915, xxi, 37. Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL A. M. A., Feb. 13, 1915, p. 582.

measure have proved of no avail. If repeated injections should be desired, without withdrawing the blood a second time from the donor, it would be simple enough, inasmuch as citrated blood remains fluid for several days, to take a large quantity of blood from the donor at one time, citrate it, and inject from every twelve to twenty-four hours for two or three days.

No less instructive than the therapy of purpura hemorrhagica is the experimental and laboratory work done in recent years, leading to a more complete knowledge of the pathogenesis and nature of this disease. As early as 1887 Deny observed a reduction in the number of blood platelets in purpura hemorrhagica. Somewhat later Hayem, and since then various other workers in this field, have corroborated Deny's discovery. The normal number of blood platelets is variously estimated as between 200,000 and 300,000 per cubic millimeter.[17] In Duke's[4] series of purpura patients the blood platelet count was below 10,000 in the severe, and between 20,000 and 65,000 in the mild cases, a decided reduction from the normal.

Experimenting with animals, Ledingham[18] produced a condition resembling purpura in guinea-pigs by inoculation of an antiserum prepared by immunizing rabbits with guinea-pig blood platelets. Duke[4] produced a similar condition in rabbits and incidentally decreased the number of blood platelets by repeated injections of diphtheria antitoxin and of benzol. He concludes that the condition may apparently be caused by any agent which reduces the platelets to a sufficient degree. That purpura depends in great part on a deficiency in the number of platelets in the circulating blood is shown by the fact that transfusion benefits, and the improvement persists, as long as the platelet count is at a high level, but the symptoms return if the platelet count again falls sufficiently low.[4]

Hayem has described a remarkable and interesting phenomenon[19] occurring in practically all cases of purpura hemorrhagica. Normally, a blood clot quickly retracts from the sides of the vessel in which it is contained, and expresses serum. The clot in purpura hemorrhagica does not retract, nor is there any extrusion of serum. The coagulation time in purpura is usually not prolonged, thereby helping to distinguish this disease from hemophilia; but the bleeding time,[4] determined by estimating the length of time a needle prick will bleed, after blotting up the clot at the bleeding site every thirty seconds, may be prolonged from normal (which is from one to three minutes) to as long as several hours.

From this brief outline, it may be seen that, although the study of purpura hemorrhagica, especially as regards etiology and treatment, is still in its infancy, the excellent work of various observers in the last few years has shown the way to a better understanding of the whole subject, and has awakened a hope that the solution of many of the problems associated with this disease may not be far distant.

17. Wright, J. H., and Kinnicutt, Roger: A New Method of Counting the Blood Platelets for Clinical Purposes, THE JOURNAL A. M. A., May 20, 1911, p. 145. The ordinary Thoma-Zeiss hemacytometer is employed, using the red cell pipet, and diluting the blood 1:100. The diluting fluid consists of two parts brilliant cresyl blue and three parts aqueous solution of potassium cyanid (1:1,400). The nuclei of the white blood cells stain dark blue, the protoplasm light blue; the red cells are decolorized and appear as "shadows"; the platelets appear as small lilac-colored, oval or elongated bodies.

18. Ledingham, J. O. G.: Experimental Production of Purpura in Animals by the Introduction of Anti-Blood-Plate Sera, Lancet, London, 1914, i, 1673.

19. Hayem, G.: Du Caillot non rétractile; suppression de la formation au serum sanguin dans quelque états pathologique, Compt. rend. Acad. d. sc., 1896, cxxiii, 894.

CONCLUSIONS

1. The best methods of treatment of purpura hemorrhagica, in addition to the usual measures are: (*a*) subcutaneous or intravenous injection of human blood serum; (*b*) transfusion, and (*c*) intramuscular injection of whole fresh human blood.

2. The intramuscular injection of whole blood is a simple, harmless, effective procedure, and should be employed before other radical measures in all cases of severe purpura hemorrhagica; it may also have a wide field of usefulness in hemophilia and other blood diseases; in bleeding from various parts or organs of the body; in wasting diseases, and in many infections.

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PROTEOLYTIC FERMENTS OF THE BLOOD SERUM IN TABES DORSALIS AND GENERAL PARESIS *

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Of late a large amount of work has been done with the Abderhalden test, different tissues being used as substrate in an endeavor to obtain specific reactions which might be of value in diagnosing various obscure conditions. The field of nervous diseases especially has attracted considerable attention. In this respect, for example, dementia praecox and some other nervous disorders have been said to give specific reactions, such tissues as ovary, testicle, brain and other organs being used as substrate.

Abderhalden reports some results which seem to confirm these statements, and his explanation is that in the various diseases which he enumerates a disturbance of the function of certain glands of internal secretion occurs which causes them to produce their secretion in a manner abnormal either in quality or quantity. In these conditions he believes there are mobilized, in the blood of the affected individual, ferments which have a specific action on the substance of the gland whose secretion is disturbed.

This theory has been eagerly embraced by many men, and from the glowing accounts which emanated from the various clinics during the early part of last year, the men not engaged in this work were led to believe that at last many if not all of the dark spots in the field of nervous diseases were to be illuminated.

As might have been expected by any one familiar with the principles of biologic reactions and serologic tests, these predictions have failed of realization.

It has been demonstrated by myself[1] and others that similar positive reactions can be obtained by using placental tissue prepared according to Abderhalden's directions for use in the test of pregnancy.

This speaks strongly against the specificity of the ferments that are present in these bloods. If they are mobilized against proteins from certain organs, then they should be specific and digest only those organs. This was the first blow delivered against the theory in this country. Not only is it true for the test in certain nervous diseases, but also it has been shown that blood in nearly all pathologic conditions will give

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1. Falls, F. H.: A Study of the Ferment Activity of the Blood Serum, THE JOURNAL A. M. A., Oct. 3, 1914, p. 1172.

a positive Abderhalden test when placenta is used as a substrate.

Recently another blow has been dealt at the theory in Europe by De Waele[2] and Plaut,[3] and in this country by the excellent work of Jobling, Eggstein and Petersen,[4] and by Bronfenbrenner.[5]

These investigators have demonstrated that the various tissues used as substrate in the Abderhalden test are not digested by the ferments in the blood serum. On the contrary, they are even more resistant to tryptic digestion than the same tissue not exposed to the action of the serum. The explanation of this phenomenon is that the tissue used as a substrate plays a purely passive rôle in the experiment and acts by adsorbing certain antitryptic substances in the serum which are of lipoidal nature, thus allowing the trypsin to digest the serum proteins present in the blood. According to De Waele, the trypsin of the blood has a specific affinity for the globulin fraction of the serum protein.

From these facts it is obvious that we are forced to change our views regarding the ferment activity of the blood in these conditions. One point, however, is apparently settled, and that is that in many of these conditions there is an increase in the ferment content

TABLE 1.—TABES DORSALIS

No.	Duration of Disease	Last Meal, Hrs.	Incubation Period, Hrs.	Ninhydrin Reaction	Control Reaction	Remarks	Age, Yrs.
1	2 yrs.	5	20	++++	0	Stood at room temp. 28 hours	26
2	2 mos.	5	20	++++	0	Stood at room temp. 28 hours	34
3	4 mos.	5	20	+++++	0	Stood at room temp. 28 hours	35
4	1 yr.	4	24	+	0	.....	52
5	.....	4	24	++	0	.....	55
6	3 yrs.	4	24	0	0	Slight hemolysis.....	46
7	3 to 4 yrs.	6	23	Very faint	0	Gastric crisis.....	40
8	4 mos.	4	22	++	0	.....	25
9	1 yr.	4	22	+	0	.....	36

of the blood. This fact is admitted both by the men who have worked with the antitrypsin method of determination, and by those who have worked with the Abderhalden dialysis method.

Whether or not this phenomenon is of practical value as a diagnostic measure, its theoretical importance is obvious. These fundamental facts have a significance which, even though the present state of our knowledge regarding them is incomplete and difficult to interpret, nevertheless can hardly be disregarded. It is from a further study along this line that we may hope to gain a clearer conception of the underlying pathologic processes concerned in the production of these diseases.

EXPERIMENTAL

I wish to report a series of cases of tabes dorsalis and general paresis which I have recently studied by the Abderhalden method. These cases were first observed when I was trying to determine what pathologic conditions would give a positive Abderhalden test and therefore would have to be ruled out when applying the test in a case of suspected pregnancy.

2. De Waele, H.: Ztschr. f. Immunitätsforsch., 1915, xxii, 171.
3. Plaut, F.: München. med. Wchnschr., 1914, lxi, No. 5.
4. Jobling, J. W.; Eggstein, A. A., and Petersen, William: Serum Proteases and the Mechanism of the Abderhalden Reaction, Studies on Ferment Action, XX, Jour. Exper. Med., 1915, xxi, 239.
5. Bronfenbrenner, J.: Jour. Exper. Med., 1915, xxi, 227.

I was greatly surprised to find that the blood serum contained tryptic ferments in excess of the normal in practically all of these cases. In these tests I followed the technic used by the Abderhalden school as closely as possible, so that results obtained might be comparable. Human placental tissue was used as substrate in all tests. For details regarding the technic and preparation of the various constituents entering into the test, reference is made to my article of last year.[1]

TABLE 2.—GENERAL PARESIS

No.	Duration of Disease	Last Meal, Hours	Incubation Period, Hours	Ninhydrin Reaction	Control Reaction	Remarks	Age
1	Information not reliable	3½	22	+	0	Doing well under salvarsan	33
2	Information not reliable	3	22	++++	0	.....	35
3	Information not reliable	3	22	+++	0	.....	42
4	Information not reliable	5	24	+++	0	Cerebrospinal syphilis	44
5	Information not reliable	3	22	++++	0	Congenital tabes Optic atrophy	15
6	Information not reliable	4	22	++++	+	Taboparesis.....	34

Most of these patients were adults and all were males. The patients were from the nervous services at the Cook County Hospital, Chicago, to the attending men of which I take this opportunity of expressing my thanks for free access to the clinical material. None of the patients were suffering from any preexisting or concomitant disease as far as could be determined.

Tabes dorsalis was first investigated. The cases were all in adult males; all were under treatment. A few had received salvarsan; others were under mercury and the iodids. The reaction was positive in all but one case. The reason for its absence in the one case I cannot explain from the facts adduced. The strength of the reactions in the first three cases in Table 1 cannot be fairly compared with the others, because the tubes were incubated twenty hours, and then allowed to stand at room temperature twenty-four hours, before dialyzation was interrupted. As would be expected, the reactions were stronger than in the other cases.

TABLE 3.—MENINGITIS

No.	Duration of Disease, Weeks	Last Meal, Hours	Incubation Period, Hours	Ninhydrin Reaction	Control	Remarks	Age	Remarks
1	?	Several	22	Negative	0	Semicomatose	37	Tuberculous?
2	?	3½	22	Faint trace	0	Pneumococcal or epidemic	50	Chronic nephritis
3	?	Several	24	Negative	0	Epidemic.....	25	Delirious
4	2½	4	21	Faint trace	0	Tuberculous..	20	
5	.....	3½	22	Negative	0	Wassermann+	30	Possibly syphilitic

Neither the age of the patient nor the duration of the disease appeared to have any effect on the reaction obtained. In general the reactions may be said to be relatively weak in this disease.

The reactions were stronger in the cases of general paresis, as is shown in Table 2. This is as we would expect from a knowledge of the clinical course of the disease. It is as a rule relatively rapidly progressive, and the processes are more destructive than in tabes. Hence by analogy with the results obtained in other

acute infectious diseases, one would expect to obtain relatively strong reactions.[6]

I have incorporated in this paper a series of cases of meningitis which may be regarded as control experiments, inasmuch as they all gave negative or very faint reactions. This is a peculiar fact and to my mind can be explained only on the assumption that the greater part of the reaction to the infection occurs outside of the blood stream in these infections and that therefore there is relatively slight variation in the ferment content of the blood under these conditions.

I have also incorporated for comparison a series of pregnancy cases in Table 4. These control tests were made under the same conditions as the tests in the cases of tabes and general paresis. It will be seen that certain of the latter reacted fully as strongly as some of the cases of pregnancy.

The results seem to indicate that the ferment activity of the blood is increased in both tabes dorsalis and general paresis. The reactions were relatively weaker in the cases of tabes than in the cases of general paresis. This corresponds with our knowledge of the disTABLE 4.—PREGNANCY CASES

No.	Length of Gestation, Months	Last Meal, Hours	Incubation Period, Hours	Nin. hydrin Reaction	Control	Remarks
1	5	5	22	+++	I.S+P* 0	Clinical examination confirmed diagnosis
2	9¼	4	16	+++	S† 0	
3	9¼	5	16	+++	I.S+P 0	
4	10	4	16	+++	S 0	
5	9¼	4	16	+++	S 0	
6	9¾	5	16	++	S 0	
7	8¾	4	16	++	S 0	Placenta praevia
8	9	4	16	++	S 0	
9	5	5	22	+++++	I.S+P 0	Threatened abortion
10	4	5	21	++++	I.S—P 0	Threatened abortion

* I.S+P = Inactivated serum + placenta used as control.
† S = Serum alone used as control.

eases, tabes being a relatively benign form of the infection, and usually of long duration and relatively slow tissue changes.

General paresis, on the other hand, is a malignant form of the infection. The progress is rapid, and tissue changes are intense. This coincides with my findings as regards the tryptic power of the blood serum in the acute infectious diseases.

The demonstration of the presence of an increased amount of ferment in the serum is one thing. The interpretation of this fact and its clinical and pathologic significance is quite another matter. Will the presence or absence of the reaction be of value from the standpoint of diagnosis or prognosis? Will it be of value in regulating the time and amount of treatment? Will attempts artificially to vary the ferment content of the blood have any effect on the course of the disease?

These are all questions that demand investigation. I am well aware that the present series is too short from which to draw hard and fast conclusions. It is intended more to point out the fundamental facts, and also to correct certain misconceptions that have arisen from the early work along these lines.

It seems to me that the present method is rather cumbersome and demands too much time on the part of the investigator. Although I have had no personal experience with the antitrypsin method, from a study of the work of others it would seem that more rapid and equally reliable results could be obtained by this method. From the amount of work that is being done, this point should soon be settled.

6. It has occurred to me that the administration of iodids to these patients might theoretically be considered as the cause of the positive reaction, since it has been shown that iodin, by uniting with the unsaturated bonds of the antitryptic lipoids, increases the tryptic activity of the serum.

CONCLUSIONS

1. The ferment activity of the blood serum is increased above the normal in tabes dorsalis and general paresis.

2. This increase is greater in general paresis than in tabes dorsalis.

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THE NATURE OF PHARMACEUTIC NAPHTHENE OIL (LIQUID PETROLATUM)

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The recent increase in the use of liquid petrolatum as a laxative, particularly in cases of intestinal stasis, taken together with the fact that water-white oils, intended for internal use, are now being largely manufactured in this country, seems to warrant the publication of the following notes on the chemical character, properties, mode of manufacture and testing of oils of this class.

The claim has been frequently and persistently made that the Russian oils, presumably those derived from the Baku district, consist of naphthene hydrocarbons (sometimes erroneously confused with hydrocarbons of the benzene series), whereas American oils consist chiefly of hydrocarbons of the methane or paraffin series and that, therefore, liquid petrolatums made from "American oils" have not the same properties and should not be substituted for the Russian liquid petrolatum. Although the crude petroleums obtained from the world's various producing districts vary greatly in composition, America has great quantities of petroleum of the same general character as the Baku oil. The claim that the Russian or Baku petroleum consists essentially of naphthene hydrocarbons is equally true of certain American oils. In general, as the fractional distillation of the crude petroleum proceeds, the distillates become poorer in hydrogen, the predominating constituents of the successive fractions being represented by the empiric formulas C_nH_{2n+2}, C_nH_{2n}, C_nH_{2n-2}, C_nH_{2n-4}, etc. The hydrocarbons contained in petroleum distillates may be grouped together as follows:

1. *Paraffin Hydrocarbons,* C_nH_{2n+2}.—These hydrocarbons predominate in the gasoline and kerosene fractions obtained from most crudes. The simpler compounds are liquid, but the hydrocarbons of this series which boil above about 300 C. are solid at ordinary temperatures and constitute the ordinary paraffin of commerce: example, tetracosan, $C_{24}H_{50}$, melting point from 50 to 51 C., isolated by Mabery from paraffin from Pennsylvania oil.

2. *Naphthene Hydrocarbons*, C_nH_{2n}.—These hydrocarbons rarely predominate in the gasoline and kerosene fractions except in the case with certain crudes. Thus, the gasoline fraction from Baku oil contains from 80 to 90 per cent. of naphthenes. The lighter kerosene fraction of the Ohio Trenton limestone oil contains about 65 per cent. of naphthene ($C_{12}H_{24}$ to $C_{17}H_{34}$). The fraction of the Santa Barbara (Calif.) crude oil, which boils below 170 C., consists almost exclusively of naphthenes, and Coates[1] has shown that the lighter fractions of the Jennings (La.) petroleum consist almost entirely of naphthenes. Chemically, naphthenes are, as a rule, as inert as the paraffin hydrocarbons.

3. *Polynaphthenes*, C_nH_{2n-2} and C_nH_{2n-4}. — The higher boiling, viscous oils, such as are employed for lubricating, and the so-called liquid petrolatum oils belong to this class. Such lubricating oils may or may not contain a small quantity, usually not more than 2 per cent., of paraffin, which crystallizes out when the oil is chilled.

4. *Benzene Hydrocarbons*.—These hydrocarbons, of which benzene and toluene are well known examples, occur in very small amounts in all crude petroleums which have been thoroughly examined. In the rigorous refining to which all oils of the liquid petrolatum class are subjected, the benzene homologues are completely removed.

5. *Olefin Hydrocarbons*.—These substances also are represented by the empiric formula C_nH_{2n}, but, in contrast with the naphthenes, are unsaturated, containing the olefin group $\diagdown C = C \diagup$. They are very reactive chemically, are usually very irritating to the mucous membranes, and the gastric irritation, which may be very severe, which follows the swallowing of unrefined oils, has been attributed to their presence. Turpentine or pinene is an example of such an unsaturated hydrocarbon. When oils are refined by concentrated or fuming sulphuric acid, as is customarily the fundamental operation in the manufacture of oils for pharmaceutic use, these unsaturated hydrocarbons are completely removed.

6. *Fluorescent and Coloring Matter*.—As a rule, the fluorescence of mineral oils is completely removed incidental to the process of refining it to such a degree as to remove the petroleum taste. The substances causing fluorescence are present only in traces, and are readily sulphonated by concentrated or fuming sulphuric acid, and may be removed[2] in this way. A trace of tarry matter in solution suffices to give the oil a yellow tinge and usually, though not always, a bad taste. Some preparations of the nature of petrolatum may be quite yellow and yet be practically tasteless. Final removal of color may be accomplished by filtration through fullers' earth or by distillation with superheated steam. In pharmaceutic oils a slight color should not be objected to, provided the oil is sufficiently good with respect to taste.

There is great need that some proper and uniform nomenclature be adopted to designate the viscous, water-white, tasteless mineral oils usually designated as white paraffin oil, liquid petrolatum and by a score or more of trade names. As has been pointed out by Marcusson,[3] *most oils of this class contain no paraffin hydrocarbons whatever*, being made up of hydrocarbons of the naphthene, C_nH_{2n}, and polynaphthene, C_nH_{2n-2} and C_nH_{2n-4} class. Such an oil made by Marcusson by the action of concentrated and fuming sulphuric acids on a light lubricating oil yielded a finished product having the specific gravity 20°/4° of 0.8827 and which showed the following analysis:

Found	Calculated for $C_{20}H_{38}$
C.....86.74	86.33
H.....13.43	13.67

I have made such pharmaceutic oils from the lubricating oil distillates of several American crudes, and while some of them contain a small amount of paraffin which crystallizes out on chilling, it should be mentioned that many American oils, such as most of the oils of the Gulf region, contain no paraffin whatever. Even when prepared from typical Pennsylvania oils, the customary refinery method of removing the paraffin wax, namely, chilling, suffices to free the oil of paraffin wax to such an extent that a pharmaceutic oil prepared from such low cold test Pennsylvania oils would be practically free from paraffin. Such an oil would therefore be a true naphthene and polynaphthene oil. I suggest, therefore, that in order to avoid confusion and to designate properly oils of this class, they be called "white naphthene oils." The claim that *only* Russian oils belong in this class has no basis of fact and has been advanced presumably for business reasons.

The facts cited above may serve to explain the results reported by Dr. W. A. Bastedo, of the Council on Pharmacy and Chemistry of the American Medical Association:[4]

> The results of this clinical investigation appear to warrant the conclusion that so far as therapeutic results are concerned the differences in the action of the three varieties of liquid petrolatum, namely, light Russian liquid petrolatum, heavy Russian liquid petrolatum and American liquid petrolatum, are too slight to be of importance. Hence, the choice between the lighter and the heavier oils, and between the Russian and the American is an open one, to be determined not by therapeutic differences, but by palatability, depending on the degree to which the refinement of the oil is carried out.

To this it may be added that the promiscuous sale for internal use of the lighter oils, lighter than the specific gravity 0.885, is to be condemned owing to the fact that trouble due to leakage, as reported by Dr. Bastedo, is much more common with the lighter oils. Leakage will rarely result if the original recommendations of Sir Arbuthnot Lane be followed, and only the more viscous oils of 0.885 specific gravity, or heavier, be employed for internal use.

In regard to testing oils of this class, the most important tests are undoubtedly taste, keeping quality and viscosity; but since the specific gravity is roughly a measure of the viscosity and since the former determination is much more easily and quickly carried out, it may be substituted for the viscosity measurement. In regard to taste I am able to confirm the experience of others that masticating the oil with ordinary white bread brings out the petroleum taste, making this test for taste more delicate and enabling one to distinguish between oils which are nearly identical in this respect.

One of the most important tests that can be made is for keeping quality. Many oils are perfectly color-

1. Coates: Jour. Am. Chem. Soc., 1906, p. 384.
2. Brooks and Bacon: Jour. Indust. and Engin. Chem., 1913.
3. Marcusson: Chem. Ztg., 1913, p. 550.
4. Bastedo, W. A.: Clinical Experience with Liquid Paraffin (Liquid Petrolatum), THE JOURNAL A. M. A., March 6, 1915, p. 808.

less and tasteless when freshly prepared, but after standing, particularly if exposed to the light, acquire an objectionable taste and a light yellow color. Exposure to daylight in loosely stoppered bottles will develop very marked differences within from four to ten days in the case of oils which originally are excellent and apparently identical in quality.

Various chemical tests have been proposed, such as treatment with sulphuric-nitric acid mixture. In my opinion, none of these tests is of any significance whatever. Thus, in regard to the sulphuric-nitric acid test, it may be mentioned that, as Gurwitsch[5] states, "in general it may be said that the reaction with nitric acid proceeds somewhat more readily with the naphthenes than with the paraffins." If the purpose of the test is really nitration, then it should be carried out differently, since, as Namjetkin has shown, dilute nitric acid alone, specific gravity about 1.30, is best for nitrating paraffins and naphthenes. The usefulness of such a test is not apparent, and I believe that the simple tests suggested above are easily sufficient to enable one to pass judgment on the relative merits of oils of this class. The freezing test for detecting the presence of paraffin has also been proposed; but if paraffin does not separate from the oil at room temperature, it certainly could not do so in the body. The presence of a small amount of paraffin indicates that the oil has probably been prepared from one of the so-called "paraffin base" crudes, not added as an adulterant.

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CANDY MEDICATION *

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The idea of presenting medicine in candy form is as old as are confections and lozenges. Candy medication is also in extensive use, most especially in the form of a great variety of phenolphthalein preparations from phenolax and purgen to zam zam and ex-lax. Two facts, however, that are not sufficiently known are: first, that a large number of other medicaments may be administered in the same form; and, secondly, that candy medicaments can be prepared extemporaneously by any good pharmacist.

It is now quite a number of years since, delighted with the results obtained from the administration of the candy medicaments that could then be found on the market — and they were few indeed — I commenced a systematic search for medicaments that could be given in candy form.[1] I soon learned that, to be a real advance in therapeutics, candy medication must meet the following requirements:

1. It must be a perfectly delicious sweet, attractive in form, color and odor, and free from the suspicion of disagreeable or medicinal taste or odor.

2. It must disintegrate rapidly in the mouth, for a sick child will usually not suck candy as a healthy youngster would.

3. It must be possible for the average pharmacist to prepare the medicament extemporaneously, so that the physician may be able to fit the dose and combination of the medicine to suit the case, that the patient may receive a fresh and perfect preparation at all times, and that the pharmacist may not be forced to carry in stock a large assortment of these more or less perishable goods.

In view of these exacting requirements, it may be rather surprising that over fifty different medicaments are at present available for administration in candy form. This has been accomplished by taking advantage of the fact that some medicines are practically tasteless; that modern synthetic chemistry has enriched our resources in this direction by the production of a considerable number of tasteless or almost tasteless and yet active substances, and that many of the isolated active principles are easily disguised.

In some cases a chemical trick is successful, for example, using a little alkali or a little acid to render the substance less soluble in the mouth. Quite a number of almost insoluble substances of slight but lingering taste can be made perfectly pleasant by impregnating them with saccharin by trituration with a 3 per cent. alcoholic solution of saccharin, and permitting the alcohol subsequently to evaporate.

I have experimented considerably to find a candy form that would lend itself to extemporaneous preparation, and yet yield tolerably stable products. I have found it in sugar tablets, for which I have proposed the name "sweet tablets" (Latin, tabellae dŭlces).[2]

To prepare these, the pharmacist needs no greater equipment than a ten-dollar tablet machine. Were a universal formula for a base for sweet tablets desired, it might be found in the following formula:

VANILLA CACAO SUGAR

Tincture of vanilla	5.00 c.c.
Cacao powder	10.00 gm.
Dextrose	10.00 gm.
Sugar, powdered	80.00 gm.

Mix thoroughly by trituration in a mortar, and preserve in a well-stoppered bottle.

Mixing this sugar preparation with the proper amount of medicament in such proportion that it is contained in 0.30 gm. yields a powder that is ready for compression in the tablet machine.

For substances that have a slight flavor of their own, such as thyroid, sulphur or podophyllum, cinnamon cacao sugar is better. The latter may be prepared by substituting 0.5 c.c. of 10 per cent. spirit of cinnamon for the tincture of vanilla

Inasmuch as variety in flavor and appearance is quite desirable in this form of medication, I have experimented to find a substitute for cacao that would lend itself as well to extemporaneous tablet making as that substance, when added to sugar. I have found it in what I propose to call "fat starch," for which the following formula might be given:

FAT STARCH

Alcoholic solution of saccharin, 3 per cent.	15.00 c.c.
Liquid petrolatum	25.00 c.c.
Starch	75.00 gm.

Mix the starch with the solution of saccharin, and permit the alcohol to evaporate completely. Then incorporate the liquid petrolatum.

5. Gurwitsch: Wissenschaftliche Grundlagen der Erdölbearbeitung, Berlin, 1913.

* From the Department of Pharmacology, University of Illinois, College of Medicine.

1. Fantus, Bernard: Candy Medication, The Journal A. M. A., Sept. 14, 1912, p. 842.

2. Fantus, Bernard: Tabellae Dulces, Jour. Am. Pharm. Assn., May, 1914.

This fat starch added to sugar to the extent of 20 per cent. yields a powder that is ready for compression in the tablet machine. By appropriate coloring and flavoring, quite a variety of sweet tablets can be elaborated.

To give these formulas in detail would lead beyond the limits of this article. They have been published elsewhere.[3]

For the purposes of the physician, the naming of the medicaments available in this form and some discussion of their use will probably suffice. The dose given is generally as much as can well be administered in this form; and, wherever possible, that suitable for a child of 3 years of age, in no case, however, exceeding it. Smaller dosage could easily be given, larger dosage only in case of a few. Combinations have purposely been avoided, but could easily be effected in many instances.

THERAPEUTIC USES OF SWEET TABLETS

It may be of interest to see how many indications may be met, confining oneself entirely to the list of candy medicaments.

1. For effect on the *alimentary tract*, we have the choice of the following *antiemetics:* sweet tablets of: cocain, 0.001 gm. (1/60 grain); anesthesin, 0.015 gm. (1/4 grain); morphin, 0.0006 gm. (1/100 grain); bismuth subnitrate or subcarbonate, 0.20 gm. (3 grains), and cerium oxalate, 0.12 gm. (2 grains).

Among these the most important, no doubt, are the bismuth salts, though anesthesin possesses a most interesting and possibly useful benumbing effect in the throat as well as in the stomach.

Emetics.—If enough of the sweet tablets containing the nauseant expectorants, apomorphin, tartar emetic or emetin be given, vomiting could be induced. However, the syrup of ipecac answers all the requirements of an emetic for children; and sweet tablets would scarcely be used for this purpose.

Antacids.—The doses of the antacids that can be administered in form of sweet tablets are possibly too small to be of much use. For instance, not more than 0.06 gm. (1 grain) of sodium bicarbonate can be made palatable in this form. But soda mint tablets used by adults contain only 0.30 gm. (5 grains). The sweet tablets of magnesia contain only 0.06 gm. (1 grain), yet they represent one-third teaspoonful of milk of magnesia. Sweet tablets of chalk contain only 0.12 gm. (2 grains) of chalk; this, however, represents one-half teaspoonful of the official chalk mixture, and in a much more permanent form.

Charcoal may be of no use as an adsorbent in pediatrics. I should like to point out, however, that if charcoal is of any use in practice, that contained in the tablets prepared after my formula is in dry and finely powdered form, and is therefore much more likely to act as adsorbent than the granulated charcoal generally used in tablet making. The ordinary charcoal tablet contains 0.30 gm. (5 grains) of charcoal. Sweet tablets may be made, containing 0.18 gm. (3 grains) of this substance.

We have a fair number of candy *cathartics* to select from, though the first three named below are probably the most successful: sweet tablets of: calomel, 0.006 gm. (1/10 grain); mercury with chalk, 0.03 gm. (1/2 grain); phenolphthalein, 0.06 gm. (1 grain); elaterin, 0.0006 gm. (1/100 grain); resin of podophyllum, 0.001 gm. (1/60 grain); resin of jalap, 0.03 gm. (1/2 grain); senna, 0.06 gm. (1 grain), and sulphur, 0.06 gm. (1 grain).

I have not had much occasion to use the others. The dose of the last two is probably too small to be of much use; and yet sulphur tablets used by adults contain only 0.30 gm. (5 grains).

Intestinal antiseptic action can be obtained from the above-named mercurials and from the salicylates to be discussed below.

It may be of interest to know that 0.06 gm. (1 grain) of lactic acid bacilli may be put up in the form of sweet tablets.

Among the *anthelmintics* santonin 0.03 gm. (1/2 grain) may readily be given in this form.

2. Among the medicines used to affect the *respiratory tract,* cough remedies are, of course, the most important. Of these, we have a fair assortment in candy medication.

We have the following *expectorants:* sweet tablets of: tartar emetic, 0.0006 gm. (1/100 grain); apomorphin, 0.0006 gm. (1/100 grain); emetin, 0.0012 gm. (1/50 grain); sajodin, 0.06 gm. (1 grain), and terpin hydrate, 0.03 gm. (1/2 grain).

Of these, the first three are useful to loosen up a dry cough during the acute stage of bronchitis. Sajodin, an iodin preparation, has the expectorant value of potassium iodid; it is useful, therefore, in subacute dry bronchitis. Terpin hydrate, on the other hand, is more likely to be useful when expectoration has become freely established.

The use of opiate is, of course, not advisable in the treatment of cough in children. Should it, however, be required, sweet tablets of heroin up to 0.0006 gm. (1/100 grain) or of morphin up to 0.0006 gm. (1/100 grain) would be available. If a less decided *sedative* be desired for an excessive cough, sweet tablets of sabromin 0.06 gm. (1 grain), a bromin preparation, may be tried. For antispasmodic action, atropin 0.0003 gm. (1/200 grain) is available.

3. For effect on the *circulatory system.*

Of *stimulants* for the circulatory system we have the following assortment in the form of sweet tablets: digitalis, 0.008 gm. (1/8 grain); strophanthin 0.00003 gm. (1/2,000 grain); atropin, 0.0003 gm. (1/200 grain); strychnin, 0.0003 gm. (1/200 grain), and caffein 0.006 gm. (1/10 grain).

The digitalis is in form of the powdered leaf, which probably, after all, if biologically tested, is the most reliable form of digitalis. The strychnin used is an adsorption compound of strychnin with fullers' earth,[4] which, though less active than strychnin, is still capable of developing strychnin action.

Should a *depressant* to the circulation be desired, it would be available in form of aconitin, 0.00003 gm. (1/2,000 grain). For *vasodilator action,* we have sweet tablets of nitroglycerin, 0.0003 gm. (1/200 grain).

4. For effect on the *urinary system:* For *diuretic* action, diuretin is available in doses of 0.015 gm. (1/4 grain), though even this dose is rather hard to disguise. It is perhaps the least satisfactory of the sweet tablets. Caffein could be given in dose of 0.006 gm. (1/10 grain). It is probably not needed, however, as we could administer coffee even more readily.

3. Fantus, Bernard: Candy Medication, St. Louis, C. V. Mosby Company, 1915.

4. Fantus, Bernard: Fullers' Earth: Its Adsorptive Power, and Its Antidotal Value for Alkaloids, THE JOURNAL A. M. A., May 29, 1915, p. 1838.

The *urinary antiseptic* hexamethylenamin lends itself very well to this form of administration, it being possible to give as much as 0.06 gm. (1 grain) per tablet.

As *antispasmodic* for the urinary tract, for instance, in the treatment of certain forms of enuresis, atropin, 0.0003 gm. (1/200 grain) is available.

5. For effect on the *skin,* pilocarpin, 0.0012 gm. (1/50 grain) can be administered in this form; and it would probably serve better as *diaphoretic* than Dover's powder, 0.03 gm. (½ grain), which latter, however, inasmuch as it has other uses, is perhaps an interesting addition to the candy materia medica. Should *anhidrotic* action be desired, we have atropin.

6. For effect on the *nervous system,* we have depressants as well as stimulants. The general nerve *depressant* action of bromids may be obtained, in a mild way, from sabromin, the dose of which, 0.06 gm. (1 grain) per tablet, is, however, rather small.

For *hypnotic* action, we have adalin 0.03 gm. (½ grain), and sulphonmethane, 0.03 gm. (½ grain), to choose from, the former lending itself better to this form of administration than the latter. Scopolamin, 0.00006 gm. (1/1,000 grain) and morphin, 0.0006 gm. (1/100 grain), are also available if required.

As *stimulants* to the nervous system we have: strychnin, 0.0003 gm. (1/200 grain); atropin, 0.0003 gm. (1/200 grain) and caffein, 0.006 gm. (1/10 grain).

7. For *antipyretic* action we have the following to choose from: sweet tablets of acetphenetidin, 0.06 gm. (1 grain); antipyrin, 0.015 gm. (¼ grain); acetylamidosalol (salophen), 0.06 gm. (1 grain); aconitin, 0.00003 gm. (1/2,000 grain), and aristochin, 0.06 gm. (1 grain).

Of these the most pleasant and efficient are the sweet tablets of acetylamidosalol (salophen). Antipyrin, on the other hand, is rather difficult to disguise completely.

8. The following hematinics can be offered in candy form: sweet tablets of: reduced iron, 0.06 gm. (1 grain); iron carbonate, 0.02 gm. (⅓ grain), and arsenic trioxid, 0.0006 gm. (1/100 grain). So pleasant are these that it is difficult to see why either iron or arsenic should be given in any other form. Iron and arsenic may also be given combined.

9. *Tonics.*—Physicians have such faith in the tonic properties of iron, quinin and strychnin that it may be of interest to many that this combination may be given in the form of sweet tablets. By using the strychnin preparation discussed above and aristochin (see below) we can obtain a sweet tablet that represents 1 c.c. (15 minims) of elixir of iron, quinin and strychnin in form of a slightly bitter chocolate tablet.

10. *Specifics,* no doubt the most important kind of medicament, fortunately lend themselves well to this method of administration. For the treatment of *malaria,* we have sweet tablets of aristochin, 0.06 gm. (1 grain), by means of which it is possible to give this arch-type of bitter drugs in form of perfectly delicious chocolate tablets, and yet there can be no reasonable doubt as to the activity of this preparation. Saloquinin, 0.06 gm. (1 grain), of which sweet tablets can also be prepared, is perhaps more useful because of the salicylate it contains in the treatment of *rheumatic fever,* for which also the following other salicylates are available: sweet tablets of: acetylsalicylic acid (aspirin), 0.015 gm. (¼ grain); novaspirin, 0.03 gm. (½ grain); acetylamidosalol, 0.06 gm. (1 grain), and magnesium salicylate, 0.03 gm. (½ grain). Of these, acetylamidosalol, a combination of salicylic acid and phenacetin, is the most successful, certainly from the standpoint of perfect disguise and probably also from that of efficiency.

For the treatment of *syphilis* we have sweet tablets of sajodin, 0.06 gm. (1 grain), as well as the following mercurials: sweet tablets of: yellow mercurous iodid, 0.003 gm. (1/20 grain), red mercuric iodid, 0.001 gm. (1/60 grain); mercury with chalk, 0.03 gm. (½ grain), and calomel, 0.006 gm. (1/10 grain).

For the treatment of *cretinism* we have thyroid, of which 0.06 gm. (1 grain) may be given in almost perfect disguise in the form of a cinnamon chocolate tablet.

For those who have never used candy medication, there is a revelation in store in the positive enjoyment and eagerness with which children take these sweet tablets. Their only serious drawback actually lies in their pleasantness, which leads to the possibility of a child poisoning itself by surreptitiously eating too many of them at one time. This danger must be guarded against by never prescribing more of these tablets at one time than would constitute a safe dose, if they were all eaten at one time.

No doubt, the method is not yet perfect. Its further development requires the cooperation of those in actual practice, from whom inquiries, suggestions and criticisms will be most welcome.

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THE ACUTE TYPHOID ABDOMEN

WITH ESPECIAL REFERENCE TO SURGICAL COMPLICATIONS

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Occasional operative reports and more frequent necropsy reports have fairly well demonstrated that the occurrence of acutely inflamed appendixes in typhoid fever is more than a coincidence. It is not difficult to imagine the occurrence of the complication when one recognizes the pathology of the primary disease. There are two factors contributing mainly to the appearance of this condition: (1) inflammatory edema of the ceco-appendiceal opening with consequent retention of its secretions within the latter organ, together with the associated circulatory and inflammatory complications usually found under such conditions which may or may not be due to the activity of Eberth's bacillus, and (2) the actual involvement of the appendiceal lymphoid tissue by the typhoid bacilli in a method similar to that seen in Peyer's patches. Either may be entirely responsible for an associated attack of acute appendicitis. The unraveling of such a complication involves some of the prettiest diagnostic problems in acute abdominal surgery, for it involves not merely the diagnosis of an acute abdominal condition per se, but rather its diagnosis through the veil of signs and symptoms pertaining to another existent acute abdominal condition, if we may class typhoid as such.

It is fair to say that many typhoid patients exhibit increased tenderness on the right lower abdomen. This may be expected when one recalls the usual situation of the lesions, the lower ileum. Hence, tenderness

in the right iliac fossa may be only the result of localized patches of peritoneal inflammation due to underlying intestinal ulceration in this region. Fever usually exists, since the occurrence of this complication is to be expected more frequently when the typical lesions are most pronounced. When one inspects the peritoneal surface of the diseased ileum, in the third week, for instance, and sees the localized areas of peritonitis corresponding to the multiple ulcerations, the presence of fibrin, and fibropurulent deposits, and the purulent free fluid of variable quantity, it is easy to believe that an additional inflammation in an adjacent portion of the intestine — I refer to the appendix — may not change the symptomatology materially. It is enough that the most closely watched patients may sometimes develop even a perforation and die without the slightest inkling being given of a change in the abdominal features. In view of this, there is no clinical aids of any value at all which should be dismissed, and yet one often finds that on account of the depleted condition of the patient many of the usual clinical aids will fail in the test.

It is hardly a question in typhoid conditions as to whether a patient has appendicitis or perforation. It is merely a question as to whether the patient is in such a condition that, one or the other of these being suspected, the presence of either being a potential fatality, exploratory operation should be undertaken.

In a series of nine cases of typhoid in which I operated for suspected perforation, four (Table 1) showed acute appendicitis, in one of which (Case 2) there was a large perforation near the tip of the appendix. In passing, it is interesting to note that a fifth patient (Case 5, Table 2) on whom I operated, who had the usual signs of subacute appendicitis of two days' standing, showed a perfectly normal appendix; but numerous large swollen glands in the lower mesentery—evidently the cause of the tenderness — proved later to be the first demonstrable sign of a subsequent typical attack of typhoid fever.

Of the five remaining cases, brief notes are given in Table 3. It is to be observed that in no case was there an attempt to distinguish between appendicitis or suspected perforation. Rather the point common to

TABLE 1.—ESSENTIAL POINTS IN FOUR CASES OF ACUTE TYPHOID ABDOMEN SHOWING ACUTE APPENDICITIS

Case	1. W. J.	2. M. M.	3. B. S.	4. M. L.
Age	15	34	14	25
Week	Sixth	?	Third	Fifth.
Diagnosis	Typhoid intestinal perforation	Typhoid intestinal perforation	Typhoid intestinal perforation	Typhoid intestinal perforation.
Onset of symptoms	Rigidity of abdominal muscles	Increasing rigidity and increasing distention; diminution in liver dulness	Hemorrhage; falling temp.; increased abdominal rigidity	Sudden pain in right iliac fossa; marked resistance in right iliac fossa; diminished liver dulness.
Tenderness	General increase	General increase, especially over lower right rectus	General increase not well localized	Well localized in right iliac fossa.
Leukocytosis	7,480			5,120.
Temperature	No especial change	No especial change	Rapidly falling	No change.
Pulse	92 (fair volume)	Poor; rapid	Fair quality; no change	120 (fair quality).
General condition	Fair	Poor	Fair	Fair.
Operative findings	Appendicitis,acute; distended gallbladder	Appendicitis, acute, gangrenous; perforation	Appendicitis, acute	Apendicitis, acute.
Free fluid	Considerable; turbid	Large quantity of foul smelling fluid	None	None.
Lower ileum	Markedly ulcerated	Markedly ulcerated	Markedly ulcerated	Markedly ulcerated.
Operative measures	Appendectomy; cholecystostomy	Appendectomy	Appendectomy; no drainage	Appendectomy; no drainage.
Results	Well	Patient died 12 hours after operation	Well	Operative result good.*
Operative date	Sept. 8, 1910	Sept. 2, 1911	Sept. 6, 1910	Sept. 3, 1910.

* Patient died eleven days afterward of the intercurrent fever.

Theoretically, leukocytosis, absent in typhoid, should indicate the presence of an inflammatory lesion. Nevertheless, one cannot depend on this feature for two reasons: first, the so-called appendicitis may be due to a typhoid ulceration in this organ with the possibility of little associated inflammation and, second, if this be a frank case of acute inflammatory appendicitis, the general system may be so disturbed as not to show the usual increase in white corpuscles. Increase in temperature exists, and this, likewise, may be disturbed so that we cannot depend on this feature even should the typhoidal temperature be low to start with. Tenderness, perhaps one of the most prominent symptoms of inflammatory conditions, may or may not be increased. It would hardly be justifiable to expect this, should the lesion be solely typhoidal with no associated inflammatory reaction in the organ as a whole; but, theoretically, we may expect an increase if the appendicitis is general. Practically, however, the general state may be such that the insensitiveness to pain may throw one entirely off the track in searching for this feature. Localized pain may mean appendicitis, an increasing peritonitis about the ulcerated ileum, perforation, or it may be entirely unreliable and signify nothing definite.

all cases consisted in the signs of increasing peritoneal irritation in the right iliac fossa suggesting peritonitis, appendiceal involvement, periintestinal irritation from ulceration, or direct perforation, and the important question for decision was always, Can we justifiably decide against exploration; in other words, Do we know that a fatal lesion does *not* exist? To distinguish between these various lesions may be distinctly impossible, and in my full series the operation was performed always with the diagnosis of suspected perforation, though in two cases the onset of a sudden, severe abdominal pain in the third week of typhoid with a rising leukocytosis placed the possibilities of perforation, whether intestinal or appendiceal, on what I thought to be a fairly firm basis, only to find in one of these merely an acutely inflamed appendix, though in the second a typical ileal perforation existed.

Increasing distention, increasing resistance to pressure, and increasing tenderness in the right iliac fossa, pain in the lower abdomen, and a diminution in liver dulness seem to be the cardinal danger signals, and if we may, by temperature, pulse, facial changes, and by increasing leukocytosis clinch more strongly the diagnosis of peritoneal inflammation, so much the more accurate will our diagnosis be.

Three patients died within the first twelve hours. Each had general peritonitis with quantities of foul smelling purulent fluid and intestinal contents throughout the peritoneal cavity. Little may be expected in cases at this stage. This merely argues for early interference. Two other patients died, one eleven days later from the typhoid fever, after making an excellent operative recovery. Another died on the eighth day, after making a similar recovery, at which time we did not recognize the value of using silver wire as a suture

TABLE 2.—FINDINGS IN CASE 5

Onset Symptoms	Operative Findings	Result
Pain and tenderness in right iliac fossa; slight increase of temperature	Normal appendix; enlarged, swollen, mesenteric lymph glands in lower ileum	Cure; no disturbance due to operation.

in such cases, and on the seventh day the wound parted, allowing the intestines to extrude under a full dressing.[1] The stain on the dressing was not interpreted, and when seen, eight hours afterward, the patient was in a state of shock that could not be overcome by the replacement and resuturing, and he died on the eighth day. Four patients were discharged well after recovering from operation and the typhoid fever.

Statistics are deceiving. Suffice it that with the danger signs of peritoneal inflammation appearing, the possibilities must be carefully weighed, for without

TABLE 3.—FINDINGS IN FIVE CASES OF ACUTE TYPHOID ABDOMEN SHOWING ILEAL PERFORATION

Case	Age	Onset Symptoms	Operative Findings	Results	Date of Operation
6. H. B.	21	Hippocratic facies; abdominal distention not well localized	Large amount of foul, dirty, free fluid; ileal perforation	Patient died 3 hours later	Sept. 7, 1910
7. J. H.	17	Sudden, severe pain in right iliac fossa followed by rise in temperature and pulse and marked increase in tenderness in both iliac fossae	Much free turbid, yellowish fluid; ileal perforation	Cure.....	Feb. 5, 1911
8. P. Y.	36	Pain in lower abdomen; exquisite tenderness in right iliac fossa; distention	Ileal perforation	Cure.....	May 19, 1911
9. W. H.	25	Rapid distention. Exquisite tenderness in right iliac fossa	Ileal perforation; spreading peritonitis	*	Sept. 16, 1911
10 C. I.	40	Face ashy gray; cold sweat; thready pulse; distention; marked tenderness in right iliac fossa	Ulcerated ileum; general peritonitis; ileal perforation	Death in three hours	Oct. 5, 1910

* Patient did excellently for seven days when the wound broke, and the intestines protruded under a heavy dressing. This was not recognized for eight hours, and operative measures at this time could not overcome the shock, and the patient died in twelve hours.

extreme care in the diagnosis we may be consigning to his death a patient who has chances of 1:2 or 1:3 of getting well should he be subjected to the surgical intervention indicated by the lesion.

Finally, the more carefully one studies this condition and the greater the endeavors to forestall death from surgical complications, the more the possibility of opening a typhoid abdomen showing no actual existent surgical complications. Yet, without belittling the effects of such operative procedures, I believe that it can be fairly said that this danger may be almost completely discounted when one realizes the desperate condition into which the patient may rapidly sink should the suspected lesion be present. In two thirds of our cases, actual perforation was found. In the remaining third, a lesion was found which might or might not have gone on to perforation. In no case in which operation was performed was there absence of surgical complication,[2] so that, with extreme care on the part of the physician, the possibility of unnecessary operating will be a negligible factor, far less to be feared than permitting the patient to pass a certain point beyond which there is no hope for cure.

1. A recent abdominal case, in which epidemic cerebrospinal meningitis was contracted after operation, and the wound parted on the seventh day, with absolutely no evidence of healing, still further emphasizes that in operations in intercurrent abdominal complications during acute fevers, silver wire or, at least, some nonabsorbable suture, must be used, as we cannot depend on the healing properties of the wound itself when subjected to these conditions.

2. With the exception of Case 5, in which operation was performed for subacute appendicitis, which showed a normal appendix and enlarged mesenteric lymph glands due to typhoid fever, unrecognized at the time of operation.

THE ETIOLOGY OF THE CURRENT EPIDEMIC OF RESPIRATORY INFECTIONS IN CHICAGO

A PRELIMINARY NOTE *

GEORGE MATHERS, M.D.
CHICAGO

The current epidemic of respiratory infections has become so widespread that a large percentage of the population of various cities in the United States has been temporarily incapacitated, and business has been seriously crippled. These outbreaks of so-called grip or influenza consist of acute infections of the respiratory tract, especially the nasopharynx, larynx and larger bronchi, with occasional involvement of the accessory sinuses and the lungs. The importance of such epidemics from the standpoint of public health cannot be overestimated, and it is surprising that so little that is definite is known concerning the etiologic factors involved.

Various organisms, such as *Bacillus influenzae, Micrococcus catarrhalis* and the pneumococcus, have been described in connection with such infections, but the evidence in each instance is inconclusive and the etiology remains more or less problematic. Before specific measures either of a prophylactic or of a curative nature can be developed, the causative agents must be determined. The etiologic problems presented by these acute infections demand complete bacteriologic study of the mucous surfaces of the infected air passages, which unfortunately under normal conditions often harbor virulent bacteria. Is the etiologic factor a new organism that has a special affinity for these tissues, or do these diseases represent new pathogenic characters that have been acquired by a normal bacterial inhabitant of the respiratory tract?

A careful bacteriologic examination has been made in a considerable number of cases of respiratory infection during the current epidemic in Chicago, and the results seem sufficiently interesting to merit a brief report.

In this work cultures were made from the sputum, nasal discharge and the pharyngeal mucosa. Human blood agar plates and slants were used, and in many

* From the Memorial Institute for Infectious Diseases.

instances anaerobic cultures were made. The material to be cultured was carefully washed through several changes of sterile normal salt solution, and the surface of the culture mediums inoculated. The cultures were allowed to incubate at 37 C. for from twenty-four to forty-eight hours.

Examinations of this kind have been made in twenty-four cases of respiratory infection, and in seventeen instances a hemolytic streptococcus has been found to be the predominating organism. This organism grows in small white semitranslucent colonies on blood agar plates, surrounded by a clear zone of hemolysis from 1 to 3 mm. in diameter. In stained smears these organisms are small gram-positive micrococci arranged in pairs and chains. Chain formation is marked, however, in broth cultures. The strains examined culturally present all the characteristics of the common *Streptococcus pyogenes* type. Green-producing streptococci and pneumococci have uniformly been found also in these cultures. Four of the pneumococcus strains have been studied biologically, and three of these were found to belong to the atypical group commonly present in the normal mouth. The fourth strain exhibited all the characteristics of *Pneumococcus mucosus,* and the patient from whom it was isolated died with a complicating lobar pneumonia. It is interesting to note that *B. influenzae* and *Micrococcus catarrhalis* have not been found in any of these cultures.

Since pneumococci and green-producing streptococci are inhabitants of the normal mouth, and hemolytic streptococci are uncommon in infections of this nature, except tonsillitis, these results are suggestive. The striking frequency with which a hemolytic streptococcus has been isolated in the acute stages of this infection indicates that this organism may be of primary importance in the etiology of the current epidemic in Chicago.

Before any definite conclusions can be drawn, however, many other possibilities must be excluded. Tunnicliff has described a peculiar bacillus which she found in connection with rhinitis. Many of the infections begin with a severe coryza; hence, before *B. rhinitis* can be excluded, many cultures must be made in very early cases. Furthermore, the associated pneumococci must be studied as to their biologic reactions, and the antibody content of the patient's serum must be investigated in relation to the hemolytic streptococci. Observations along these lines, as well as cultural observations in a larger series of cases are being made, the results of which will appear in a later communication.

These preliminary findings emphasize the importance of careful bacteriologic examination in such diseases. Before the usual diagnosis of grip or influenza is justifiable, some attempt at bacteriologic study should be made, for it is a striking fact that the diagnosis of influenza is rarely corroborated by bacteriologic findings.

These observations, however, give rise to new problems, the solution of which would be of great value in the explanation of these epidemics of acute respiratory infections. The development of specific therapeutic measures, either of a prophylactic or of a curative nature, for such diseases obviously depends on a thorough understanding of the etiology of these diseases.

637 South Wood Street.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

CALCIUM PHENOLSULPHONATE (See N. N. R., 1915, p. 245).—The following non-proprietary preparation has been accepted:

Calcium Phenolsulphonate-P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

FERROUS LACTATE (See N. N. R., 1915, p. 164).—The following non-proprietary preparation has been accepted:

Iron Lactate-Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM ACID PHOSPHATE (See N. N. R., 1915, p. 346).—The following non-proprietary preparation has been accepted:

Sodium Phosphate, Monobasic-Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

PHLORIDZIN (See N. N. R., 1915, p. 248).—The following non-proprietary preparation has been accepted:

Phloridzin-Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SULPHANILIC ACID (See N. N. R., 1915, p. 350).—The following non-proprietary preparation has been accepted:

Sulphanilic Acid-Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

EXTRACT OF ERGOT, PURIFIED (See N. N. R., 1915, p. 116).—The following non-proprietary preparation has been accepted:

Ergotin-Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

ANTITHYROIDIN-Moebius (See N. N. R., 1915, p. 39).—The following dosage form has been accepted:

Antithyroidin-Moebius Tablets, ¾ gr.—Each tablet contains antithyroidin-Moebius ¼ grain. Prepared by E. Merck, Darmstadt, Germany (Merck and Co., New York).

EUQUININE (See N. N. R., 1915, p. 258).—The following dosage forms have been accepted:

Euquinine Tablets, 2 grs.—Each tablet contains euquinine 2 grains. Prepared by Vereinigte Chininfabriken, Zimmer & Co., Frankfort, a.M., Germany (Merck and Co., New York).

Euquinine Tablets, 5 grs.—Each tablet contains euquinine 5 grains. Prepared by Vereinigte Chininfakriken, Zimmer & Co., Frankfort, a.M., Germany (Merck and Co., New York).

FERRATIN (See N. N. R., 1915, p. 165).—The following dosage form has been accepted:

Ferratin Tablets, 7½ grs.—Each tablet contains ferratin, 7½ grains. Prepared by C. F. Boehringer & Soehne, Waldhof, Mannheim, Germany (Merck and Co., New York).

STYPTICIN (See N. N. R., 1915, p. 82).—The following dosage forms have been accepted:

Stypticin Hypodermic Tablets, ¾ gr.—Each tablet contains stypticin ⅔ grain. Prepared by E. Merck, Darmstadt, Germany (Merck and Co., New York).

Stypticin Sugar-Coated Tablets, ¾ gr.—Each tablet contains stypticin ⅔ grain. Prepared by E. Merck, Darmstadt, Germany, (Merck and Co., New York).

Stypticin Dental Tablets, ¾ gr.—Each tablet contains stypticin ⅔ grain. Prepared by E. Merck, Darmstadt, Germany (Merck and Co., New York).

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THE RESUSCITATION OF THE HEART AFTER ARREST

It is well known that there are circumstances under which an arrest of the heart's action, and consequent death, may occur when this organ itself is not irremediably beyond the power of recovery. The difficulty in the situation is that as soon as the circulation is stopped by a cardiac failure there is no entirely satisfactory practical way of bringing stimuli to bear on the arrested organ that will cause it to resume its function and restore the circulation. Respiratory failure, with its attendant lack of oxygen and accumulation of carbon dioxid, is easily remedied by any of several methods of artificial respiration. Attempts to start the heart in these emergencies have involved massage, electric stimulation and the use of drugs. The latter procedure has encountered almost insuperable obstacles, owing to the difficulty of getting any drug into intimate contact with the whole heart so long as there is no circulation to carry it. Even intravenous injection into a vein near the heart is unlikely to bring a dissolved substance into contact with more than the chambers of the right side: in order to be effective it should be carried through the pulmonary circulation to the left side and into the aorta, from which it can permeate all parts of the cardiac musculature through the coronary vessels. Reverse injection into the arteries near the heart has also been attempted to accomplish the same purpose, but with little practical success. The attempt to resuscitate the heart by injection directly into its interior or its musculature is an uncertain and somewhat dangerous process, and gives no assurance that the substance introduced will reach that portion of the organ responsible for originating the beat.

It has occurred to Gunn and Martin,[1] of the pharmacologic laboratory at the University of Oxford, to try another method of getting stimulating substances to an arrested heart, namely, by injection into the pericardial sac. It appeared that by this procedure, combined with massage, a solution of a drug could be brought into contact with the exterior of the whole heart. To what extent drugs thus brought into the pericardial cavity will actually permeate the visceral epicardium has remained to be experimentally ascertained. One is reminded, in the method suggested, of the familiar experiments in the physiologic laboratory in which the frog's or turtle's heart is commonly "bathed" in a solution of drugs for pharmacologic study. Obviously it might be expected that a higher concentration of any drug would be required in order to reach the myocardium from the exterior, rather than by intravascular channels of perfusion. Gunn and Martin have found that atropin, pilocarpin and epinephrin, when injected into the pericardial sac of animals as proposed, can rapidly produce their characteristic effects on the heart up to a certain point. The immediate action is a local one, and is not due to an absorption of the drugs into the general circulation.

With the possibility of a helpful method thus demonstrated, it has remained to combine the method with massage of the heart, a procedure long ago proposed and often employed in the resuscitation of this organ.[2] When massage of the arrested heart is performed with a view to reviving spontaneous contractions, the compression should be gradual and relaxation abrupt, according to Gunn and Martin. It acts both as an artificial circulation and as a mechanical stimulus to the heart muscle. Massage should be regularly interrupted at short intervals for a few seconds to allow the spontaneous beats to develop.

According to the Oxford pharmacologists, massage of the heart can be performed in the following ways, stated in order of efficacy: (1) by direct compression of the heart through an opening in the thoracic wall; (2) by compression of the heart above the diaphragm through an opening in the abdominal wall; (3) by simple compression of the abdomen, and (4) by simple compression of the thorax. When one of these procedures is combined with the intrapericardial injection of epinephrin, the heart can be revived even in cases of severe chloroform poisoning in animals, and even after ten or more minutes have intervened since the last heart beat. The significance of shortening this interval to the utmost is now realized as the result of the demonstration that the central nervous system of the higher animals and man cannot survive complete anemia very long without permanent injury to the brain cells.

The sequence of events suggested by Gunn and Martin in the treatment of cardiac arrest is as follows: artificial respiration, intrapericardial injection of epinephrin, and massage of the heart through an opening in the abdomen. If, when the heart has been started, the blood pressure continues low and the

1. Gunn, J. A., and Martin, P. A.: Intrapericardial Medication and Massage in the Treatment of Arrest of the Heart, Jour. Pharmacol. and Exper. Therap., 1915, vii, 31.

2. For the literature on resuscitation of the heart see, Pike, F. H.; Guthrie, C. C., and Stewart, G. N.: Jour. Exper. Med., 1908, x, 38.

heart beats consequently remain feeble, speedy and permanent improvement can be obtained by intravenous injection of either epinephrin or pituitary extract. There are no serious reasons apparent why a similar procedure should not be applied to the human subject in conditions like chloroform poisoning in which general recovery might be anticipated to result from resuscitation of the heart. One can scarcely speak of any risk involved when the human heart has stopped beyond the power of spontaneous recovery. The resuscitation procedure indicated as most rational by experiments on animals is likely to be the one offering the greatest prospect of success in averting permanent death under similar conditions in man.

HUMAN MILK

To any one who seriously considers the unique rôle of milk in the dietary of man, particularly in the early period of growth, it must come as wholly unexpected to find how scanty is our knowledge of certain important features of the subject. It is not enough to say that milk is an important food; it is well nigh indispensable at certain ages. A superiority for the nutritive requirements of the growing infant is almost universally conceded to human milk. For cow's milk, the most prominent substitute for human milk, hundreds of more or less superficial analyses are available, so that the general variations in fundamental components are fairly well understood in the case of the most familiar breeds of cattle. The paucity of reliable data regarding human milk becomes apparent as soon as one attempts a compilation of what has been published on the subject.

There are, it is true, numerous isolated analyses dealing either with one or a few components of the milk or with samples of the mammary secretion collected without special reference to the period of lactation or other physiologic considerations. With few exceptions, scarcely any representative number of statistics have been reported in relation to the composition of a twenty-four-hour sample of human milk. In addition to fats, proteins and sugar, both cow's and human milk contain organic substances which have little or no nitrogen, and which are soluble in ether or alcohol as well as water, but of which the chemical nature still remains unknown. The amount of these substances in human milk is said to be about 1 per cent. at the beginning of lactation and about 0.5 per cent. in the middle period of lactation. At this time cow's milk is reported to contain about 0.3 per cent. of such substances which are possibly of importance in nutrition.

These facts alone speak for the desirability of more intensive study in this field of physiologic chemistry. Many of the published analyses of breast milk are open to criticism because of the small samples used for examination. This objection applies in particular to the estimation of the inorganic constituents where the analytic methods call for representative portions. Pediatrists will therefore welcome the valuable series of painstaking analyses completed on a large number of twenty-four-hour samples of human milk by Holt and his collaborators[1] at the Babies' Hospital, New York.

Many of the facts elicited have been anticipated; but this elaborate investigation of more than thirty large samples gains in value by its representative character. They show that, in the colostrum period, woman's milk has high protein and high ash with rather low fat; in the transition period the protein and ash are lower while the fat is higher; in the mature period (after one month) the composition of normal milk does not vary in any essential or constant way quite up to the end of lactation. The only striking feature of late milk is a decline in quantity, though there is noted a slight fall in all the solid constituents except the sugar. Of the different constituents of milk, the least variation both in individuals and in periods is seen in the sugar. The proportion of this is somewhat higher than the generally accepted 7 per cent.; 7.5 per cent. is nearer the correct figure. The greatest individual variations are seen in the fat, though the period variations in fat are not marked. The protein is highest in the colostrum period, and falls to a little over half the proportion in mature milk, during which period it is seldom over 1.25 per cent.; of this about one third is casein and two thirds are lactalbumin. The high ash of the colostrum period is chiefly due to the amount of sodium and potassium.

Of the salts which make up the ash, the greatest individual, as well as the greatest period, variations are seen in the sodium; the least individual and period variations are seen in the calcium, the proportion of which is nearly constant throughout the period of lactation. The largest constituent of the ash of woman's milk is potassium; this with the calcium together make up more than half the total ash. Although in amount the total ash of cow's milk is about three and one-half times as great as that of woman's milk, the proportion of different salts which make up the ash is nearly the same, the only exceptions being that cow's milk has more phosphoric acid and less iron.

The content of iron is worthy of a little independent consideration. It is reported that, according to the most accredited analyses, human milk contains only 1.7 mg. of iron in a liter, while cow's milk has barely one third as much — really a negligible quantity. By these figures iron forms but 0.00007 per cent. of the ash of cow's milk, and 0.00015 per cent. of the ash of woman's milk. These facts give additional confirma-

1. Holt, L. E.; Courtney, A. M., and Fales, H. L.: A Chemical Study of Woman's Milk, Especially Its Inorganic Constituents, Am. Jour. Dis. Child., October, 1915, p. 229.

tion to what has occasionally been emphasized in THE JOURNAL in respect to the danger of a paucity of iron in the diet of adults whenever cow's milk and other foods notably deficient in this element furnish the preponderant part of the diet.

DEATHS OF PHYSICIANS IN 1915

During 1915 the deaths of 2,451 physicians in the United States and Canada were noted in THE JOURNAL. Reckoning on a conservative estimate of 156,000 physicians, this is equivalent to an annual death rate of 15.71 per thousand. For the thirteen previous years the death rates were as follows: 1914, 14.41; 1913, 14.64; 1912, 14.13; 1911, 15.32; 1910, 16.96; 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.20; 1905, 16.36; 1904, 17.14; 1903, 13.73 and 1902, 14.74. The average annual mortality for the period from 1902 to 1915 inclusive was, therefore, 15.71 per thousand. The chief death causes in the order named were the same as for last year, namely: senility, heart disease, cerebral hemorrhage, pneumonia, accident and nephritis. The age at death varied from 21 to 102, with an average of a little over 59 years. The general average of age at death since 1904 is 59 years, 6 months and 11 days. The number of years of practice varied from 1 to 79, the average being 32 years, 4 months and 26 days. The average for the past twelve years is 32 years, 2 months and 13 days.

Causes of Death.—There were 227 deaths assigned to general diseases; 276 to diseases of the nervous system; 293 to diseases of the circulatory system; 173 to diseases of the respiratory system; 115 to diseases of the digestive system; 124 to diseases of the genito-urinary system; 400 to senility; 44 to suicide; 104 to accident; 21 to homicide, and 88 after surgical operation. Among the principal assigned causes of death are senility, 400; heart disease and cerebral hemorrhage, each 218; pneumonia, 154; accident, 104; nephritis, 90; malignant disease, 65; tuberculosis, 62; suicide, 44; angina pectoris, 28; septicemia, diabetes, appendicitis and arteriosclerosis, each 22; homicide, 21; typhoid fever and gastritis, each 15; uremia, 14; meningitis and intestinal obstruction, each 12; myocarditis, 11; cholecystitis, 10; influenza and paresis, each 8; anemia and bronchitis, each 6; rheumatism, insanity, endocarditis, peritonitis and prostatitis, each 5; embolism, 4; typhus fever, dysentery, erysipelas, epilepsy, acute dilatation of the heart, gastric ulcer, hernia and cirrhosis of the liver, each 3; pellagra, leukemia, arthritis deformans, drug addiction, paralysis, paralytic dementia, mastoiditis, asthma, atrophy of the liver, ptomain poisoning and dropsy, each 2, and malaria, scarlet fever, diphtheria, tetanus, alcoholism, cerebrospinal fever, locomotor ataxia, neuritis, aneurysm, pleurisy and gangrene of the lung, each 1. Two physicians died in prison, and 9 lost their lives either in battle on land or by the sinking of ships on which they were medical officers.

The causes assigned for the 104 deaths from accident were: automobile, 23; falls and drowning, each 16 (of the latter, 5 physicians were drowned in attempting to save lives); poison, 11; automobile and railway, and railway, each 10; burns, 4; firearms and by animals, each 2, and asphyxiation, sunstroke, privation, lightning and explosion, one each. The 44 physicians who ended their lives by suicide selected the following methods: firearms, 17; poison, 15; cutting instruments, 5; cause not stated, 3; strangulation, 2, and asphyxiation and jumping from a high place, each one. Of the twenty-one homicides, 18 were due to firearms, one to hanging, and 2 to other means, and of these deaths, 7 occurred in feuds or affrays.

Ages.—Of the decedents, 69 were between the ages of 21 and 30; 220 between the ages of 31 and 40, 341 btween 41 and 50; 485 between 51 and 60; 519 between 61 and 70; 415 between 71 and 80; 212 between 81 and 90; 30 between 91 and 100, while one physician attained the age of 102 years. The greatest mortality occurred at the age of 61, when 68 deaths were recorded; at 70 with 65 deaths; at 62 with 63 deaths; at 55 with 58 deaths; at 60 with 56 deaths; at 75 with 54 deaths; at 56, 58 and 64 with 53 deaths; at 54 with 51 deaths, and at 44, 59 and 66, when 50 died. There were 9 deaths at 91, 7 each at 92 and 93; 3 at 94; 2 each at 96 and 98, and one death at 102 years.

Years of Practice.—By periods of ten years, physicians died as follows during the year: in the first decade, 172, of whom 2 had been in practice less than one year and 16 less than two years; in the second decade, 356; third decade, 511; fourth decade, 598; fifth decade, 453; sixth decade, 221; seventh decade, 101, and eighth decade, 9, of whom 5 had been in practice 70 years, 2, 75 years, and one each 78 and 79 years.

Military Service.—During the year, 256 physicians died who had served in the Civil War, and of these 68 had followed the fortunes of the Confederacy, one having been the surgeon of the Confederate cruiser *Alabama* during her historic cruise of destruction; 86 had been medical officers of United States Volunteers; one a medical cadet; 11 had served in the hospital corps and 2 had been army nurses. There were 5 veterans of the Mexican War; 2 had served in campaigns against Indians; 22 had been in the Spanish-American War, and 20 had seen service in foreign wars. The Medical Corps of the Army lost 4 officers, of whom one had been surgeon general; 3 had been members of the Medical Reserve Corps, and 18 had been contract or acting assistant surgeons. The Navy lost 12 medical officers, the Public Health Service 8 officers; the Indian Service, 6 physicians, and the

organized militia, 36 medical officers, of whom 8 had attained the grade of surgeon general.

Medical Positions.—Medical colleges sustained the loss of 148 professors, lecturers, instructors or demonstrators; hospitals lost 355 members of staffs; municipalities, townships and counties, 194 health officers and boards of education or school boards, 77 members. There were 54 deaths of members of state boards of health, medical examination and registration, and charities; 47 of coroners and medical examiners, and 123 of railway surgeons.

Civil Positions.—Of those who died, one had been a member of Congress; 2, governors of states; 4, United States consuls; 11, members of state senates; 39, members of the lower houses of legislatures; 35 had been mayors; 33, aldermen; 62 had served as justices of the peace, as clerks in the government service, or in various other civil positions; 15 had been postmasters; 24, editors of medical or lay journals; 19 had been clergymen, of whom 4 were foreign missionaries; 4 had been attorneys; 107, druggists; 40, bankers; 16, medical directors of life insurance companies; 10, dentists; 3, presidents of railway companies; 6, surgeons on steamships, and 4, chemists.

Association Fellowship.—Of the 437 Fellows of the American Medical Association who died during 1915, one had been president, one had been a member of the Judicial Council, and two had been members of the House of Delegates.

COMPLEMENT FIXATION IN TUBERCULOSIS

Stimson has recently reviewed the literature of complement fixation in tuberculosis and contributed some important original work to this subject.[1] The complement fixation test in syphilis — the Wassermann reaction — has proved itself to be a great practical aid in both the diagnosis and therapy of this disease, in spite of certain rather serious limitations and uncertainties. As its limitations become better understood and the technic of its performance more uniform, its value, already great, will undoubtedly still further increase. It has unquestionably been such a distinct and helpful advance over former methods that its practical application, *mutatis mutandis,* to some other diseases, with anything like an equal degree of success, would be welcome. This is especially true of tuberculosis. Much work has been done with complement fixation methods in tuberculosis, and while success so far has not been achieved, there is nevertheless a distinctly hopeful aspect in the literature on the subject. Stimson thinks that the method even now could be used with advantage in institutions.

In this work, as in the Wassermann test for syphilis, the multiplicity of antigens is a disturbing factor. The antigen is a very important element in the reaction, and different antigens vary greatly not only in their degree but also in their kind of sensitiveness. The selection of an antigen, therefore, becomes a matter of great importance. Such a selection can be made with satisfaction only after wide experience and the correlation of laboratory experience with clinical findings and results. An antigen may give results of poor value in diagnosis, yet of high value in prognosis and therapy, and vice versa. Of the many antigens used in complement fixation in tuberculosis, Stimson gives first place to Besredka's egg medium antigen[2] for purposes of diagnosis. This antigen appears to be difficult to prepare, and is reported by many to give fixation with syphilitic antibodies also, though Bronfenbrenner[3] in his work did not find this true. Other important antigens are those composed of suspensions of tubercle bacilli in salt solution, antigens elaborated by Calmette[4] and his co-workers, especially his peptone-soluble antigen, and antigens described as alcohol or alcohol-soluble ether extracts.

As for the other elements of the reaction, the Wassermann type of technic has been generally employed, with the use of sheep cells, rabbit hemolytic amboceptor and guinea-pig complement. Stimson, in his work, made use of four different antigens. His technic was of the Wassermann type. He tested a large number of serums, and his tabulated results are interesting and important.

A consideration, in a general way, of the status of complement fixation work in relation to tuberculosis leads to the conclusion that, from a practical standpoint at least, this method for the present leaves much to be desired. With increasing experience, however, the employment of a uniform technic, the careful estimation of the value of different antigens, and especially the ability to interpret correctly the results obtained, the method may, at no remote time, prove of much significance in the diagnosis, prognosis and management of tuberculous cases. The interpretation of the findings just now seems to be surrounded with peculiar difficulty, and the influence of many different factors must be carefully considered.

Depending on the antigen and technic employed, positive fixation in tuberculous cases can be demonstrated from a maximum of 95 per cent. of cases down to a much lower figure. The antigens giving the higher percentages are of more value in diagnosis; those giving the lower figures may often be of value in imparting information as to the stage, extent and activity of the process. "Positive reactions are not indicative of immunity, and the reaction should not be described as an immune reaction." The increase of

1. Stimson, A. M.: Complement Fixation in Tuberculosis, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915.

2. Besredka: Ztschr. f. Immunitätsforsch., 1914, xxi, 77.

3. Bronfenbrenner, J.: The Complement-Deviation Test with Besredka's Tuberculin, and the Occurrence of Tuberculosis Among Syphilitics as Diagnosed by this Test, Arch. Int. Med., December, 1914, p. 786; Ztschr. f. Immunitätsforsch., 1914, xxiii, 2, 221.

4. Calmette and Massol: Compt. rend. Soc. de biol., 1912, 1913; Ann. de l'Inst. Pasteur, 1914, No. 4, p. 339.

complement fixing bodies due to the therapeutic use of products derived from the tubercle bacillus, strange to say, does not necessarily indicate improvement in the condition of the patient — indeed, the evidence is sometimes rather in the opposite direction. It would seem that information of value can be more readily gained from repeated tests along with careful consideration of all the clinical factors. It should be fully appreciated that negative reactions seem to have no value in excluding tuberculous infection.

It may be mentioned, finally, as of interest that some authors, notably Debré and Paraf,[5] have attempted, with some apparent degree of success, to demonstrate tuberculous antigens in certain secretions and exudates, such as urine and pleuritic exudates, using as a test fluid a serum known to contain tuberculous antibodies. This sort of reverse application of the reaction may in time prove of value in the diagnosis of the seat of the lesion, especially in genito-urinary tuberculosis.

PROTEINS AND ANAPHYLAXIS

The condition of abnormal sensitiveness produced in an animal by the injection of a foreign protein — the phenomenon now commonly designated as anaphylaxis or allergy — is believed to exhibit a high degree of specificity with respect to the substances used to provoke a response. A preliminary injection of serum renders the animals hypersensitive to serum but not to milk or other protein-containing materials; a preliminary treatment with milk induces sensitiveness to milk proteins but not to serum, and so on. On the basis of information acquired along these lines, the anaphylactic response has been used as a test for proteins from individual sources, as in the identification of blood.

The extensive researches of Wells and Osborne,[6] in particular, have shown that these unique reactions of the proteins are undoubtedly connected with their chemical make-up rather than their biologic origin. This has been demonstrated as the result of an elaborate study of vegetable proteins from diverse sources, carefully purified in order to separate them as completely as possible from all other substances. The anaphylaxis reaction has been obtained between fluids and extracts of tissues of plants or animals of different though closely related species. These fluids have been composed of mixtures of so many substances of practically unknown chemical constitution that attention has heretofore been directed almost exclusively to the biologic relations of the substances causing the anaphylaxis reaction, and relatively little consideration has been given to their chemical relations. In the case of the gliadins from wheat and rye, and the hordein of barley, however, a common anaphylaxis reaction is developed by two chemically distinct, but similar, proteins of different biologic origin. This indicates clearly that the specificity of such a reaction is determined by the chemical constituents of the protein rather than by its biologic origin. Wells and Osborne have pointed out that this is in harmony with the fact that chemically closely related proteins have, as yet, been found only in tissues which are biologically nearly related. They have also observed that the "group reactions," characteristic of biologic reactions between closely related species, which have usually been interpreted as indicating the presence in related organisms of identical as well as distinct proteins, can really be exhibited by single isolated proteins from related organisms. As they express it, biologic relationship and chemical relationship seem to be much the same.

When native proteins are chemically altered so that new artificial derivatives are produced, their anaphylactogenic properties appear to be lost. Proteoses and peptones, for example, prepared from albumins by digestion or other hydrolytic procedures, are practically inert in the direction of developing hypersensitiveness. They do not cause intoxication of animals sensitized with the original proteins. It has long been stated that "proteoses" occur naturally in a variety of plants; at any rate, proteins having their characteristic solubilities and other properties have been isolated from a diversity of seeds. Wells and Osborne[7] have observed that, unlike the familiar digestion derivatives, these vegetable preparations, commonly designated as "proteoses" because their solubilities are like those of the proteoses produced by the action of pepsin or trypsin on native proteins, exhibit strong anaphylactogenic properties. Indeed, their potency exceeds that of most vegetable proteins studied, probably because of their great solubility in the body fluids. The products of hydrolysis, that is, the proteoses, prepared from companion vegetable proteins seem to have no anaphylactogenic properties. Wells and Osborne conclude, therefore, that the vegetable "proteoses" belong to a group of proteins which are chemically different from any heretofore recognized. They resemble highly soluble native proteins in their anaphylactogenic capacity, and are probably quite as complex in their chemical constitution. Their designation as "proteoses" is consequently improper.

The facts here cited tend to enhance the value of the anaphylaxis reaction and give it added significance. Its specificity becomes the more striking in the differentiation of so many of the "proteose" preparations from other proteins in the same seeds. The demonstration of the dependence of the specificity on chemical constitution is an important contribution.

5. Debré and Paraf: Compt. rend. Soc. de biol., 1911, p. 228.

6. Their papers were published in the Journal of Infectious Diseases as follows: I, 1911, viii, 66; II, 1913, xii, 341; III, 1913, xiii, 103; IV, 1914, xiv, 364; V, 1914, xiv, 377.

7. Wells, H. G., and Osborne, T. B.: The Anaphylactic Reaction with So-Called Proteoses of Various Seeds: The Biologic Reactions of the Vegetable Proteins, VI, Jour. Infect. Dis., 1915, xvii, 259.

Current Comment

THE POSSIBILITIES OF POISONING WITH CARBON MONOXID

The progress of science and the improvement of industrial conditions have made possible the prevention and elimination of many hygienic dangers that beset man in his daily life. At the same time, newer modes of living and processes of manufacture have brought novel and often unanticipated menaces to the welfare of those who are concerned with them. An illustrative instance of this is the history of carbon monoxid as a source of poisoning. This product has long been known as a harmful admixture in certain combustion products; and, when attention was directed to it from time to time, steps were taken to avoid the danger involved. Mild types of ordinary combustion product poisoning still occur occasionally in homes as the result of heating apparatus with poor drafts, in gas plants, and in other places, but they are recognized and subsequently averted by proper ventilation. The installation of large electric furnaces, such as those in use at Niagara Falls, brought the possibility of carbon monoxid poisoning in an unusual way. Tons of the gas are liberated in these plants every day, but provision is made for its prompt oxidation to carbon dioxid so that no harm whatever is threatened except when there is an occasional temporary imperfection in the oxidation and ventilation arrangements. The danger from illuminating gas has increased with the augmented use of "water gas" in this country. This is particularly harmful because of its large content of carbon monoxid. It furnishes a considerable proportion of the deaths by poisoning. A "miner's disease" of some interest has been associated with carbon monoxid derived principally from explosives used in blasting. The domestic forms of poisoning with carbon monoxid gas from the use of defective heating appliances are not always of moderate severity. Usually headache, nausea and circulatory failure are the sole symptoms; but the cases may often assume a more serious aspect. This is possibly owing to the subtle ways in which the poison gains unsuspected entrance into the system. There may be repeated exposure to danger which does not reveal itself until a careful investigation is made. It is sometimes almost impossible to detect the presence of the gas and to determine what part it plays in symptoms of malaise. Even small percentages of carbon monoxid become a menace to health when the intoxication takes a chronic form. For this reason, if no other, every source of poisoning with this gas should be ascertained when possible. That carbon monoxid can arise in connection with cooking by gas has been demonstrated anew by Meyer.[1] Whenever a gas flame comes into contact with cold surfaces the possibility of imperfect combustion arises, and the products will include more or less carbon monoxid. Conditions for this are found in the arrangement of many of the gas water heaters that have attained considerable popularity in recent years. Complaints of headache and mild symptoms of carbon monoxid poisoning are sometimes presented by kitchen or laundry workers who are accustomed to remain in poorly ventilated rooms containing modern household devices of the sort referred to. The institution of suitable hoods and drafts is an essential part of any larger outfit of such gas heating appliances. The danger of combustion gas poisoning is thereby averted. The gas engine and the gasoline motor have also brought with them the unanticipated possibility of inducing intoxication from carbon monoxid. Whenever the explosion of the combustible mixture is incomplete or of moderated intensity, this gas may be formed in not inconsiderable amounts. Outdoors this is of little consequence; but indoors carbon monoxid as well as other combustion gases of the omnipresent motor may produce dangerous contamination of the atmosphere. This should now be widely recognized in the interests of hygiene.

1. Meyer, L. G.: Ueber Luftverunreinigung durch Kohlenoxyd, mit besonderer Berücksichtigung einiger weniger bekannter Quellen derselben, Arch. f. Hyg., 1915, lxxxiv, 79.

THE EXCRETORY FUNCTIONS IN CHILDREN

The occurrence of uric acid infarcts or deposits of uric acid and urates, in the kidneys of a large number of infants dying within the first few days of life, has given occasion for various speculations. At one time this phenomenon was explained on the hypothesis of a lessened oxidative power on the part of the very young, whereby less of the uric acid formed in intermediary metabolism was destroyed, and therefore more accumulated in the organism. Along with this theory went the assumption of a poor solvent power of infant's urine for uric acid. The explanation fails to satisfy us because there is no real evidence of impaired oxidative capacity in the young; and, quite aside from this, there is today no reason for considering the possibility of a further oxidation of uric acid in the body. In man this purin derivative is regarded, not as an intermediate substance, but as an end-product which is ordinarily excreted with considerable ease.[1] Another explanation for the infarcts must be sought. A more direct way of ascertaining the excretory capacity of the kidneys in children has been followed by Tileston and Comfort[2] of Yale University School of Medicine. In a variety of both healthy and sick children they have estimated the rate of phenolsulphonephthalein excretion in the urine and also the nonprotein nitrogen content of the blood. The latter designates the nitrogen of those substances remaining in the circulating medium after removal of the proteins, and includes the urea, creatinin, amino-acids, uric acid and ammonia of the blood. The outcome of these investigations appears to indicate a better secreting capacity of the child's kidney than that of the adult. There are, of course, numerous statistics now available in respect to all of these excretory or retention factors determined by the methods just cited in both health and disease in the adult. The procedures have already found a place in the routine

1. The Effect of Purin Foods on the Uric Acid Content of the Blood, Current Comment, THE JOURNAL A. M. A., Dec. 18, 1915, p. 2172.
2. Tileston, Wilder, and Comfort, C. W.: The Total Nonprotein Nitrogen and the Urea of the Blood, and the Phenolsulphonephthalein Excretion in Children, Am. Jour. Dis. Child., October, 1915, p. 278.

of careful clinical examinations. Inasmuch as few data have as yet been reported for children, it seems worth while to cite added conclusions of Tileston and Comfort. The determination, they say, of the total nonprotein nitrogen and urea of the blood is of great assistance in the diagnosis of uremia, and as a guide to the treatment of nephritis, a marked increase in these substances indicating actual or impending uremia, and calling for a diet low in protein. In the diagnosis of nephritis it is inferior to other methods, because many cases of nephritis show no retention of nitrogen. The phenolsulphonephthalein test is valuable in the diagnosis of nephritis, showing probably better than any other method the degree of impairment of renal function. In the diagnosis of uremia and as a guide to diet it is inferior to blood analysis, for a low phenolsulphonephthalein output may occur without retention of nitrogen.

"WHOSE BREAD I EAT, HIS SONG I SING"

Last September the United States Department of Agriculture issued a press bulletin describing the work of the Bureau of Chemistry in prosecuting the vendors or manufacturers of fraudulently exploited "patent medicines." At the end of the bulletin was a tabulated list of "other preparations against which the government's charge that they were falsely or fraudulently labeled was sustained by the federal courts." Tucked away in the list was a product often euphemistically described as an "ethical proprietary" but none the less essentially a "patent medicine" — "Gray's Glycerine Tonic." The editor of the *Atlanta Journal-Record of Medicine,* apparently not having read the bulletin with any great degree of care, published it verbatim. Thus it was that the *Atlanta Journal-Record of Medicine* for September, 1915, presented the interesting sight of a half-page advertisement of "Gray's Glycerine Tonic" in the same issue that contained the government's article classifying "Gray's Glycerine Tonic" among the false and fraudulent products! What happened? In the very next issue the *Atlanta Journal-Record of Medicine* apologized thus editorially:

> "In our September issue, Gray's Glycerine Tonic Comp. was inadvertently included in a list that seemed to be under the ban of the Government and very likely an injustice has been done the Purdue Frederick Company which we desire to undo as far as possible."

Did the editor mean by "inadvertently included," that he would have omitted "Gray's Glycerine Tonic" from the government's list had he noticed it in time? If so, on what grounds? It is a fact that "Gray's Glycerine Tonic" was one of the "Fifty Falsely Labeled Medicines"; it is also a fact that it is one of the products that government officials and the federal courts have declared to be sold under claims that are "false, fraudulent and misleading." If "Gray's Glycerine Tonic" was fraudulently exploited — and the government and the courts have so declared it — why is it necessary for the editor of a medical journal to apologize to his subscribers for having told them so? The only reason that occurs to us is expressed in the caption to this article.

WHAT IS LIQUID PETROLATUM?

The use of liquid petrolatum in chronic constipation, which has recently become the vogue, has naturally been commercialized; as a result, also naturally, claims of superiority of one brand over another have been made. Some of these claims may have been well founded; others certainly are not. Some have claimed superiority for those products made from Russian oil over those made from American oils. As naphthene hydrocarbons predominate in Russian crude petroleums, and paraffin hydrocarbons in many or most American crude petroleums, it was assumed that the petrolatums derived from these sources differed from each other in like manner. Both the naphthenes and the paraffins are chemically inert; but some unexplained therapeutic superiority has been assumed to reside in the naphthenes. Consequently, it has been urged that the American liquid petrolatums should not be used internally. So far these claims and counterclaims have been based on much theory and little fact. The Journal publishes this week a contribution by Benjamin T. Brooks,[1] Senior Fellow in charge of petroleum investigations at Mellon Institute, Pittsburgh. Brooks calls attention to the fact that Marcusson in 1913 pointed out that most of the so-called "mineral oils" used for therapeutic purposes contain no paraffin hydrocarbons whatever; that they consist solely of naphthenes and polynaphthenes. Brooks confirms this statement so far as American liquid petrolatums are concerned. He states that many American petroleums, such as most of those from the Gulf region, are like the Russian in containing no paraffin; and that, in the case of those petroleums that do contain it, the customary refinery method of removing paraffin is sufficient to produce true naphthene and polynaphthene petrolatums. "The claim that only Russian oils belong in this class," he says, "has no basis in fact and has been advanced presumably for business reasons." The name "paraffin oil" applied to these liquid petrolatums, then, is a misnomer. The new name, "white naphthene oils," suggested by Brooks, seems superfluous, however, since the pharmacopeial title, "liquid petrolatum," is subject to no such objection.

PROTONUCLEIN ONCE MORE

Eight years ago the Council on Pharmacy and Chemistry[2] published a painstaking and exhaustive report on Protonuclein and other products of Reed and Carnrick. This report, one of the most admirable and scientific published by the Council, shows conclusively that the whole "theory of Protonuclein therapy" is a tissue of pure speculation, into whose texture are woven only a few slender threads of fact. And yet, what has this report accomplished? If it has been read by the medical profession at large, it has been but little heeded, for not only are these products still being advertised, but also the firm has increased its list of products. The Council therefore now issues a second report on

1. Brooks, Benjamin T.: The Nature of Pharmaceutic Naphthene Oil (Liquid Petrolatum), The Journal A. M. A., this issue, p. 24.
2. Reed and Carnrick's Methods, The Journal A. M. A., Oct. 5, 1907.

Protonuclein, in which, also, is discussed a later Reed and Carnrick preparation, Protonuclein Beta.[3] The fact that the firm of Reed and Carnrick is putting forth new products while pushing the sale of the old is proof that it is still receiving the patronage of a certain portion of the medical profession. Is the medical profession proud of the fact?

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. George P. Gill, Rockford, who has been on duty with the Chicago unit of physicians in France, left for home, December 15.——Dr. Joseph S. Lundholm, Rockford, has been appointed medical director to the Municipal Antituberculosis Sanatorium.

Resolutions Regarding Fairbrother.—At a meeting of the St. Clair County Medical Society held in East St. Louis December 17, resolutions were adopted expressing appreciation of the late Dr. Henry C. Fairbrother and the loss sustained by the medical profession and the community at large by his death.

Northwestern District Society to be Formed.—At a meeting of the physicians of northwestern Illinois held in Freeport, December 16, the principal address was delivered by Dr. Joseph B. De Lee, Chicago, and it was decided to effect a permanent district organization, to include physicians in Stephenson, Carroll, Ogle and Jo Daviess counties.

Work of the State Board.—Dr. C. St. Clair Drake, secretary of the State Board of Health, mentions among the important achievements of the board, the authority given to municipalities to levy a special tax for the disposal of garbage; the progress made in the facilities for registration of births and deaths; the establishment of branches of the state laboratory at Mount Vernon and Chicago; the revision of the rules and regulations for the control of communicable diseases, and the additional propaganda through the monthly bulletin of the board.

Chicago

Fenger Memorial Fund.—The directors of the Fenger Memorial Fund announce that $550 has been set aside for medical investigation in 1916. This will be used to pay all or part of the salary of a worker, the work to be done under direction in an established institution, which will furnish the necessary facilities and supplies free of cost. It is desirable that the work undertaken should have a direct clinical bearing. Applications should be addressed to Dr. Ludvig Hektoen, 637 South Wood Street, Chicago.

Gorgas in Chicago.—The Chicago Medical Society, Chicago Single Tax Club and medicomilitary organizations of Chicago have united to give a dinner to Major-General William C. Gorgas, Surgeon-General, U. S. Army, at the Auditorium Hotel, January 10. A reception will be held from 6 to 6:30. Dr. William A. Evans will officiate as toastmaster and places may be secured by communicating with Mr. Ernest Batten, 508 Schiller Building.——The annual meeting of the Geographic Society of Chicago will be held January 8, at 7 p. m., in the gold room of the Congress Hotel. On this occasion General Gorgas will be presented with the gold medal of the society, the presentation address being made by Dr. Frank Billings. General Gorgas will deliver an address on "Sanitation in Its Relation to Geography."

KENTUCKY

Memorial to Dr. Vance.—It is proposed by the friends of the late Dr. Ap Morgan Vance, Louisville, to endow a bed in the Children's Free Hospital, in his memory.

Trachoma Clinic.—Surg. John McMullen, U. S. P. H. S., who has been conducting trachoma clinics in East Louisville, held a free clinic in Greenville, December 21 to 23, assisted by Dr. Joseph N. McCormack of the State Board of Health, at which many persons affected with trachoma or kindred disease of the eye, were treated.

Society Elections.—The Muldraugh Hill Medical Society, whose membership is made up of the counties of Bullitt, Breckenridge, Grayson, Green, Hardin, Hart, Jefferson, Larue, Marion, Meade, Nelson and Washington, convened for its annual meeting in Elizabethtown, December 9, elected Dr. Samuel H. Ridgway, Shepherdville, president, and reelected Dr. Gaylord C. Hall, Louisville, secretary.

Health Officers Meet.—The second annual meeting of health officers of Kentucky was held in the Armory, Louisville, the first week in December when 121 out of the 135 health officers of the state were in attendance. Attendance at this meeting is mandatory and the expenses are borne by the county.——The semiannual examination for license to practice medicine was held at this time by the State Board of Health.

Personal.—Dr. J. M. Jameson, Bowling Green, who has been under treatment at St. Joseph's Hospital for several months on account of injury to the hip, is reported to be making satisfactory progress toward recovery.——Dr. John R. Murnan, Covington, underwent operation for appendicitis at Lakeside Hospital, Cleveland, Ohio, November 30.——The residence of Dr. Hugh E. Prather, Hickman, was burned, November 25, with a loss of $4,000.

LOUISIANA

Antituberculosis League Election.—At the eighth annual meeting of the Louisiana Antituberculosis League held in New Orleans, December 16, the following physicians were elected to office: president, Dr. J. George Dempsey; vice president, Dr. Otto Joachim; secretary, Dr. G. Farrar Patton; treasurer, Dr. Everard W. Mahler; and other members of the executive council: Drs. Arthur I. Weil, Benjamin A. Ledbetter; Sidney K. Simon, George S. Brown, Charles L. Chassaignac, Ernest A. Robin, G. Farrar Patton, William H. Seemann, Edward L. McGehee, George S. Bel and Everard W. Mahler.

State Should Own Laboratory.—At the quarterly meeting of the State Board of Health, December 18, the board adopted the suggestion of President Oscar Dowling that a bacteriologic laboratory be established. From this laboratory are to be shipped, to every board of the state, antitoxins and serums which will be furnished to the poor free of charge. The board also made recommendations that additional employees be engaged, that midwives be organized and that assistance be given to them; that financial assistance be given to local units providing they will double the amount offered by the board, and that a board of reference be established to act in questions of doubt.

MARYLAND

Hopkins Gift Attacked.—Argument has begun in the circuit court of Baltimore, on the question whether the late Miss Mary E. Garrett had an absolute interest or only a life estate in certain property she inherited from her father and a part of which she bequeathed to Miss M. Carey Thomas for life and then to the Johns Hopkins University, as a part of a permanent endowment of its medical school.

Personal.—Dr. William H. Welch of the Johns Hopkins University, who is on his way home from China, has been decorated with the Third Order of the Sun by the Mikado of Japan.——Dr. Martin F. Sloan, medical superintendent of the Eudowood Sanatorium at Towson, has returned from a trip to California and through the South.——Dr. Charles E. Fox, formerly connected with the Maryland State Board of Health, concerning whose welfare in Serbia there were many rumors, is safe in Uskub, where he is a member of the American Sanitary Commission that left Saloniki, Greece, after completing a campaign against typhus.——Dr. William J. Todd, who has been medical adviser to both the faculty and students of Mt. St. Agnes College at Mount Washington, for a quarter of a century, has been presented with a silver chocolate service.—Dr. Christopher C. Wingo celebrated his ninety-second birthday recently at his home in Baltimore.——Dr. Charles A. Overman, Baltimore, who has been ill at the University Hospital for the past five months, is able to leave the hospital.——Dr. Marshall B. West, Catonsville, who was operated on recently at the Maryland University Hospital for appendicitis, has returned home convalescent.——Dr. Holliday H. Hayden, Baltimore, who was operated on for appendicitis, December 2, at Mercy Hospital,

3. This issue, page 48.

is convalescent.——Dr. Charles F. Nolen, Baltimore, who was recently operated on at the Union Protestant Infirmary, has recovered and returned to his home in Relay.

MASSACHUSETTS

Leprosy.—A case of leprosy was discovered in Boston, December 11. Another case was discovered five weeks earlier. The latest victim was a sailor 72 years old, born in this country, but who had followed the sea for many years and who had visited many Asiatic ports.

Staff Appointments.—The following appointments have been made to the medical staff of the Boston Dispensary: Dr. Charles H. Hare, consulting surgeon; associates, Drs. Edward L. Trombley, Robert L. De Normandie and Stephen Rushmore; assistant surgeons of the gynecologic department: Drs. Alonzo K. Paine, John B. Swift, Jr., and John T. Williams; assistants, Drs. Raymond S. Titus and Foster S. Kellogg.

Medical School Changes.—In Harvard Medical School the following appointments are announced: Dr. David Cheever, associate in surgery; Drs. James L. Huntington, Frederick C. Irving, Foster S. Kellogg, and John B. Swift, Jr., fellows in obstetrics; Dr. Samuel C. Harvey, Cabot fellow in charge of the laboratory for surgical research.——Dr. Walter W. Palmer, Boston, has resigned as fellow in medicine; Dr. Townsend W. Thorndike, as fellow in dermatology, and Dr. Gilbert Harrax, as Cabot fellow.

Personal.—Dr. Paul H. Provandie has been elected a member of the school board of Melrose Highlands, and associate medical examiner of Middlesex County.——Dr. William S. Boardman, Boston, was seriously injured, December 10, by being knocked down by a street car in Jamaica Plains.——Dr. Edward H. Bushnell has been elected school physician at large of Quincy.——Prof. Selsker M. Gunn of the Massachusetts Institute of Technology has been appointed chief of the new department of hygiene by State Commissioner of Health McLaughlin. The duties of the division consist of the direction of child welfare work, public health nursing, the promotion of traveling exhibits, public lectures and the distribution of health bulletins and pamphlets.

Consultation Clinic at Hospital.—The Massachusetts General Hospital will open a consultation clinic for people of moderate means on January 25. Every Tuesday and Friday afternoon at 2 o'clock patients referred by their physicians will be received at the outpatient department on Fruit Street for consultation and diagnosis only. These are hours apart from those of the regular outpatient clinic. Physicians are requested, if possible, to accompany their patients. When a physician is unable to accompany his patient, he will be expected to send a letter referring him to the hospital. This letter will be answered and as far as possible the diagnosis given and treatment suggested. The clinic is designed for the benefit of families with small incomes. A fee of $5 will be charged. When a Roentgen-ray examination is needed, a fee of $2 to $3 will be charged in addition. For certain other laboratory tests, charges not to exceed $1 will be made. The $5 admission fee includes more than one visit when these are necessary for a diagnosis.

Free Medical Lectures at Harvard.—Announcement is made of an annual series of free public lectures to be given under the auspices of the faculty of medicine and Harvard University at 4 o'clock on Sunday afternoons at Harvard Medical School. The schedule is as follows:

Jan. 2—Dr. Robert B. Greenough: Cancer.
Jan. 9—Dr. W. H. Potter: Military dentistry; experiences in a three months' service in the American Ambulance Hospital, Paris.
Jan. 16—Dr. Richard P. Strong: Progress in combating epidemics of some infectious diseases.
Jan. 23—Dr. Robert B. Osgood: Orthopædic problems presented by the European War.
Jan. 30—Dr. James A. Honeij: Leprosy. Cambridge.
Feb. 6—Dr. C. Morton Smith: Syphilis.
Feb. 13—Dr. Frederick H. Verhoeff: Some simple facts regarding the eyes that everyone should know.
Feb. 20—Dr. William H. Robey, Jr.: The value of physical examination to the individual.
Feb. 27—Dr. Charles J. White: Occupation as a contributing factor to certain skin diseases.
March 5—Dr. W. R. Bloor: The rôle of fat in the nutrition of man.
March 12—Dr. Franklin S. Newell: The care of pregnancy. (To women only.)
March 19—Dr. Joseph L. Goodale: Hay fever and asthma.
March 26—Dr. Franklin W. White: Chronic indigestion.
April 2—Dr. James R. Torbert: A comparison of the methods for the relief of pain in childbirth. (To women only.)
April 9—Dr. P. G. Stiles: The present conception of an adequate diet.
April 16—Dr. George B. Magrath: Death by accident; some of its causes and how to eliminate them.
April 23—Dr. Harris P. Mosher: The management of foreign bodies in the trachea, bronchi and esophagus.
April 30—Dr. Charles V. Chapin: What the individual can do to protect himself from infection.
May 7—Dr. Roger I. Lee: The importance of physical examination in health as shown by the examination of Harvard students.

MICHIGAN

Midwives.—At Detroit a midwife was convicted of practicing midwifery without a license and fined $25. The health officer, Dr. William H. Price, contends that the health board has a right to compel midwives to register and to regulate their practice. The court in this case upheld the contention.

Appropriation for Tuberculosis.—As an aid in the fight against tuberculosis, the common council of Detroit, November 23, appropriated from the contingent fund an additional sum of $13,020. This appropriation is to cover the care of thirty-five patients from December 1 to July 1.

Medical Scholarship Established.—The board of regents of the University of Michigan has been notified that W. R. Wooden, Battle Creek, has established a scholarship in medical research for one year in memory of C. C. Beach, Battle Creek. This scholarship has been awarded Dr. Carl C. Warden, Ann Arbor.

Drink Cure for Prison Inmates.—It is reported from Lansing that Governor Ferris and the State Board of Pardons, after a study of the records of men imprisoned in the penitentiaries of that state, have come to the conclusion that drink and drugs are responsible for much of the crime which causes many of the men to be sent to prison. The governor is quoted as expressing the opinion that prisoners addicted to either of these habits should be given treatment while in prison.

Personal.—Dr. J. T. Stewart Hamilton, for four years medical director of the Harper Hospital, Detroit, has been elected superintendent to fill the vacancy caused by the death of Dr. O. Wayne Smith.——Dr. Don M. Griswold, Grand Rapids, has gone to Trinidad where he will study the hookworm disease in the interest of the International Commission of Rockefeller Institute. Later Dr. Griswold will go to London for a course of study in the School of Tropical Medicine and after completing this course he will go to Mahe, India.——Dr. George C. Bassett, Detroit, has been elected medical director of the Order of the Amaranth.——The $10,000 damage suit instituted by Dr. Louis N. Yerkes, Elk Rapids, against the estate of Edward Leszynski, et al., in which the physician sought to recover damages for injuries sustained when his motor car collided with the automobile of the plaintiff, resulted in a verdict of $3,000 against the estate.——Dr. Karl Dubpernell, Detroit, fractured his right arm while attempting to crank his motor car, recently.——Dr. Edward J. Strick, Holland, has returned after several years' residence as a medical missionary in Amoy, China.——Dr. Frederick J. Larned, for several years physician and surgeon in the Upper Peninsula of Michigan, who has served as an intern in the Infants' and Children's Hospital, Boston, for nearly two years, has located in Grand Rapids.

NEBRASKA

Personal.—Dr. Harry J. Pittock, Falls City, has been appointed resident physician of the La Vina Sanatorium, Pasadena, Calif.——Dr. John W. Duncan, Omaha, was injured recently in a collision between his automobile and a coal wagon.

Health Officers to Meet.—The Nebraska Public Health Association will hold its annual convention at the Hotel Rome, Omaha, January 25 and 26. The meeting is under the auspices of the State Board of Medical Examiners and the State Board of Health, and every one interested in the conservation of health is invited to be present.

Honor Von Mansfelde. — Seventy-five physicians of Nebraska gathered at Ashland, December 21, to pay tribute to Dr. Alexander S. von Mansfelde on the occasion of his seventieth birthday. Dr. von Mansfelde was presented with a purse containing $100 in gold, the presentation speech being made by Dr. Walter O. Henry, Omaha. Dr. Edward U. Rowe, Lincoln, president of the State Medical Society, officiated as toastmaster of the banquet, and Dr. von Mansfelde was eulogized by eight speakers and made a fitting response.

NEW YORK

Vaccination.—A somewhat novel question in the administration of the vaccination law was raised at Rochester by a man who refused to permit his daughter, aged 8, to be vaccinated as required by the vaccination regulations. The man had repeatedly sent his daughter to school but she was sent

home on account of not having been vaccinated. Her father agreed to have her vaccinated if the city of Rochester would assume all responsibility and award proper compensation in case her health was destroyed. He was arrested for violation of the compulsory education law and demanded a jury trial. It is the intention to make this a test case.

Governor Approves Health Budget.—Governor Whitman has endorsed the work of State Health Commissioner Biggs, and has approved of practically all of the requests for health extension work laid out by him for the coming year. Dr. Biggs submitted requests for appropriations amounting to $626,525, as against $380,775 expended this year. The increased expenditures are largely in the departmental laboratories and for personal service. It is planned to greatly increase the laboratory service. It is announced that free pneumonia serum will soon be available. The governor has also approved a request for a physician to make physical examinations of employees of the Civil Service Department.

New York City

Correction.—Dr. F. E. Sondern, New York City, writes that he is not a member of the staff of the "Radium Sanatorium," as stated in THE JOURNAL, Dec. 11, 1915, p. 2097.

Personal.—Dr. John S. Billings, Jr., has been appointed deputy health commissioner of New York.——Dr. Simon Flexner of the Rockefeller Institute was honored by the emperor of Japan with the decoration of the Third Order of the Sacred Treasure in recognition of the help and guidance he had given to Japanese medical students in the United States.

City Faces Milk Shortage.—The milk supply has fallen 40,000 quarts a day below the average, which makes a serious shortage. It affects, however, only Grade B milk from which condensed milk is manufactured. This shortage is due to the purchase of enormous quantities of condensed milk for the Allies and also to some extent to the effect of the recent cold weather on the cows.

Hospitals Must Report Communicable Diseases.—The commissioner of health has, by a letter, notified all hospital superintendents in the city that hereafter they will be held strictly accountable for failure to report communicable diseases as required by the regulations of the sanitary code. It is said that delay in reporting these diseases, particularly typhoid fever, by the superintendents of hospitals as required by section 86 of the sanitary code has handicapped the health department in applying measures for the prevention of the spread of this and other diseases.

Diphtheria Cure Faker Convicted.—After a two days' trial in the court of special sessions in New York City, George W. Felter of Brooklyn, manufacturer of "Dr. E. H. Barton's Antidote," which was described on the package as "a certain and speedy cure for scarlet fever, diphtheria and sore throat," was convicted and fined $100 on the ground of making false and misleading statements with regard to the therapeutic effect of this nostrum. Chemical analysis showed that it contained common salt, sugar, vinegar, caramel coloring, oil of peppermint and an extract, probably of red pepper.

Doctor Witthaus Leaves Estate to Academy of Medicine.—The will of Dr. Rudulph A. Witthaus, whose estate is valued at about $150,000, leaves the residuary estate after the death of a beneficiary and after deducting a bequest of $20,000, to the New York Academy of Medicine. He also bequeathes all of his scientific books to the Academy of Medicine with the request that a portion of the income from the fund left the Academy of Medicine be devoted to maintaining the library accessible to readers during the seasonable hours of every day in the year, especially including Sunday. This, however, is not a condition of the receipt of said trust fund.

Good Housekeeping Wins Suit.—The fight waged by the magazine *Good Housekeeping* against fake cures and nostrums has been upheld by a verdict rendered in the supreme court of New York, December 20. The suit was brought by one Mrs. Jean Downs Abernethy Bishop, trading as "Jean Downs," maker of a nostrum known as "Get Slim," against the American Home Magazine Company, publisher of *Good Housekeeping*. The plaintiff claimed that *Good Housekeeping* and Dr. Harvey W. Wiley had damaged her business to the extent of $50,000 by condemning "Get Slim" as an injurious concoction that would not legitimately reduce weight. The jury rendered a verdict against the plaintiff.

Report from Crocker Research Laboratories.—Dr. Francis C. Wood has recently made public a report of the work done by the laboratories during the past year. The attention of the laboratory staff has been engaged during this time along the line of therapeutics, the investigation of the nature of cancer and the production of immunity. In conformity with the terms of the gift of the Crocker fund, investigations have been carried out as to the effectiveness of certain so-called cures for cancer. Not one of these agents has been shown to possess the slightest influence on tumors in animals. Some of them have been tested in hopelessly inoperable carcinoma in man with equally unsatisfactory results. In connection with the radium experiments alone 12,000 mice and 2,500 rats have been used. Altogether some 52,000 mice, 10,000 rats, 1,200 chickens and 1,000 guinea pigs have been used during the year. A somewhat unexpected development has been that physicians from various parts of the country have been sending patients for treatment with radium. Many of these cases are found to be operable and are transferred to St. Luke's and other hospitals for operation with most satisfactory results. This relationship with St. Luke's Hospital has made it possible to use the income of the Crocker fund for purely experimental purposes.

Changes in Sanitary Code.—The Board of Health, at its meeting December 23, made several changes in the sanitary code. The most radical was that of revoking the present section that prevents the sale in this city of horse flesh as food. Dr. Emerson stated that the Health Department did not exactly recommend the eating of horse meat, but desired to open the way for placing on the market an inexpensive and healthy food supply. He pointed out that the horse never suffers from tuberculosis and practically never communicates a malignant disease to human beings, and for this reason the sale of horse flesh would not have to be placed under the same rigid constrictions that now hedge about the sale of sheep, cows and poultry. Other changes made at this meeting were the following: The requirement that all private schools in the city must operate under a permit from the Board of Health after Sept. 1, 1916; persons suffering from typhoid fever are forbidden to engage in the handling of food; retail milk stores are exempted from the requirement of obtaining permits from the Department of Health, owing to the belief that the present rigid control of the wholesale milk supply and imperative pasteurization furnishes sufficient safeguard for the city's milk supply; the manufacture and sale of toilet preparations containing lead, mercury, arsenic and other substances detrimental to health is forbidden; a standard of purity for bathing pools has been established; it is required that all water tanks be covered in order to prevent the breeding of mosquitoes; hotels are compelled to use wooden containers for garbages in order to avoid the noise caused by the handling of metal cans.

NORTH CAROLINA

State Examination Board Meeting.—At a special meeting of the State Board of Medical Examiners held in Raleigh, December 7, Dr. Edwin G. Moore, Elm City, was elected a member to succeed Dr. Charles T. Harper, Wilmington, deceased. The next regular session of the board will be held in Raleigh, June 26 to 30.

Baptist Publication Discontinues "Patent Medicine" Advertising.—The stockholders of the corporation which publishes the *Biblical Recorder*, the leading organ of the Baptist denomination of North Carolina, at a recent meeting in Raleigh, ordered the discontinuance of all "patent medicine" advertisements when contracts already entered into have expired.

Personal.—Dr. Herman G. Heilig, Salisbury, fell down a flight of stairs recently and sustained painful injuries.——Dr. Fred C. Hyatt, city health officer of Greensboro, while paying a professional visit in the country, suffered a concussion of the brain by the overturning of his automobile.——Dr. Daniel E. Sevier, Asheville, health officer of Buncombe County, was painfully injured by the overturning of his automobile in Asheville, December 13.——Dr. Hubert B. Haywood, Jr., has been elected physician to the Agricultural and Mechanical College, Raleigh, succeeding Dr. Henry McKee Tucker, deceased.

PENNSYLVANIA

Nurses' Home Dedicated.—William Howard Taft, former president of the United States, and Dr. J. Chalmers DaCosta of Jefferson Hospital, Philadelphia, made the addresses at the dedicatory exercises of the new nurses' home for the Allentown Hospital, December 23. This structure, representing an investment of $140,000, was erected through the bequest of the late Judge Edward Harvey of Lehigh County courts.

Personal.—Dr. George W. Mellon, Monaca, who returned from medical service in the Balkans about two months ago, has started for New York City on his return to the war zone in Greece.——Dr. Mary A. Naylor has been appointed by the board of public education of Pittsburgh as medical examiner of teachers applying for retirement.——Dr. Samuel G. Dixon was elected president of the Academy of Natural Sciences at the annual meeting December 22.

Hospitals Must Insure Employees.—An opinion relative to insurance in the state workmen's compensation system was rendered to State Treasurer Young, chairman of the Insurance Fund Board, by Deputy Attorney-General Hargest, December 10. It holds that the state hospitals and similar state institutions receiving separate appropriations must insure their employees out of their own funds, and cannot have the cost of such liability insurance taken out of the appropriation of $15,000 made for state employees under the compensation act.

Philadelphia

To Relieve Dope Fiends.—The executive board of the Society for Organizing Charity has appointed H. K. Landis, agent of the Narcotic Drug Committee, to investigate drug cases for their ultimate relief.

New Course Offered by Woman's Medical College.—The new course offered by the Woman's Medical College of Pennsylvania, for social workers and club women, which includes practical field work and textbook theory, will be inaugurated the first week in January. Special exercises January 7, at the college, will mark the formal opening of the course.

Personal.—Dr. Ralph Luikhart, who has been with the Red Cross in Serbia, returned home December 22.——Dr. Richard H. Harte, ex-director of Public Health and Charities, will sail for France early in January and will work for an indefinite period at the American Ambulance Hospital.——Dr. J. William White, who has been ill in the University Hospital for several weeks, is improving.

Woman's College Buys Site.—The Woman's Medical College of Pennsylvania, which is situated at the corner of Twenty-First and Seybert Streets, has purchased the dwellings, 1338-40 N. Twenty-First Street, together with the dwellings in the rear numbered 2101-03-05-07-09-11 Seybert Street, occupying a lot 31 by 148 feet, directly opposite the college, which will be used for an additional building.

Memorial Plaque Dedicated.—A bronze portrait plaque was formally dedicated and placed on the walls of the Evans Dental Museum of the University of Pennsylvania, December 22, in memory of Willoughby D. Miller, dental surgeon, who graduated from the dental school in 1879. The plaque was the gift of the National Dental Federation, and a replica of it will permanently adorn the walls of the Zahnartlich Institute, Berlin.

RHODE ISLAND

Intern Year Required.—A report from the Rhode Island State Board of Health states that after Jan. 1, 1917, no physician will be allowed to register in that state unless he has served one year in a hospital having at least fifty beds and has attended at least ten maternity cases.

Ophthalmia Neonatorum. — Superintendent of Health Charles V. Chapin has warned physicians that ophthalmia neonatorum is a notifiable disease, and failure to report cases coming under their observation will subject physicians to a penalty. In every case attended by a midwife in which ophthalmia develops a visiting nurse will be sent immediately on receipt of the birth certificate.

WASHINGTON

State Medical Examination.—The next Washington medical examination will be held at the Davenport Hotel, Spokane, January 4, and not in Walla Walla as erroneously stated in THE JOURNAL under the heading "Medical Education and State Boards of Registration."

Personal.—Dr. Nevin D. Pontius, Seattle, has started for Europe for Red Cross service with the Allies.——Dr. Martin J. Lacey has been selected as mayor of Auburn.——Dr. A. Eddie McDowell, Spokane, expects to leave for England about January 1 for service with the allies in the war zone. ——Dr. Daniel M. Stone, Seattle, has been appointed president of the State Board of Medical Examiners, succeeding Dr. Robert Percy Smith, Seattle, resigned.——Dr. George M. Horton, Seattle, was operated on recently at Rochester, Minn., and is reported to be doing well.——Dr. Albert E. Stuht, Spokane, has been appointed chief of staff of the new tuberculosis hospital of Spokane County.

WEST VIRGINIA

Personal.—Dr. Frank LeMoyne Hupp, Wheeling, expects to go to Europe to take charge of a French Red Cross Hospital.——Dr. Page A. Gibbons, Morgantown, while hunting fell down a hill, fracturing his leg.

Qualifications for License.—An official communication received from the West Virginia Public Health Council states that at a meeting held November 30 the council adopted a resolution requiring that all applicants for a license to practice medicine in West Virginia who matriculate in the session of 1916-17 and thereafter must present evidence of preliminary qualifications including one year of collegiate work, in addition to an accredited four-year high school education. This requirement, therefore, will apply to all graduates of 1920 and thereafter.

WISCONSIN

Maternities Must be Licensed.—Under the new state law, which becomes effective January 1, the hospitals which regularly handle confinement cases and maintain maternity wards must secure licenses.

New Superintendent of Sanatorium.—The State Board of Control on December 18 elected Dr. Frank Brockway, Oshkosh, superintendent of the State Tuberculosis Sanatorium, Wales, succeeding Dr. Norman F. Hoffman, resigned.

Personal.—Dr. Albert F. Young, newly appointed superintendent of the Milwaukee County Hospital for the Insane, Wauwatosa, has reappointed the following assistants: Drs. Frederick F. Fowle, Parker T. Trowbridge and Harry W. Sargeant.

Sanatorium Control Conferred.—The Tuberculosis Sanatorium at Humboldt and Keefe Avenue, Milwaukee, which was taken over by Milwaukee County a few months ago, has been turned back to the Social Workers Sanatorium Association and the institution will receive persons in the incipient stage of tuberculosis.

CANADA

Ontario Medical Association.—The thirty-sixth annual meeting of the Ontario Medical Association will take place in Toronto, May 30 to June 2, in connection with the annual meeting of the Provincial Health Officers' Association. A more determined effort than ever is being made to line up the county medical societies into branches of the Ontario Medical Association and it is expected this will finally be accomplished at the coming meeting.

College Items.—The Royal College of Surgeons of England has decided to add the universities of Toronto, Queen's at Kingston, and Dalhousie at Halifax, N. S., to the list of universities whose graduates in medicine and surgery may present themselves for examination for college fellowship without first becoming members.——Dr. Frederick Etherington, in command of Queen's Stationary Hospital at Cairo, Egypt, has cabled the dean, Dr. J. C. Connell, Kingston, that the hospital, now of 600 beds, is to be increased to 1,000 and will be converted into a general hospital.

Drug Habit in Toronto.—The revenue collector of Detroit states that Toronto, Windsor, Chatham and London, Ont., are headquarters for drug rings. It is stated in the Toronto public press that the police of that city believe this to be true and that they have been waging campaigns against the selling and unlawful prescribing of drugs in that city. Four Toronto doctors have been convicted and some pedlers have been sent to jail. It is said that although the conditions have been laid before the Ontario Medical Council, that body has so far taken no action. The police state they intend to continue the campaign against illicit sales of morphin, cocain and heroin until the practice is stamped out of Toronto.

Appeal in Vaccination Case Lost.—The judicial committee of the privy council, London, Eng., has dismissed the petition of a Montreal woman who requested special leave to appeal against the judgment of the king's bench, Quebec, in favor of the city of Montreal. The counsel who appeared for the widow before the judicial committee stated that the case raised for the first time before the courts of the province of Quebec the question of the responsibility of muncipal corporations arising out of the enforcement of compulsory vaccination bylaws. The petitioner brought an action against the city of Montreal, claiming $10,000 damages on the grounds that she was obliged to cause her son to be vaccinated, that

he was vaccinated by medical men employed by the city of Montreal with vaccine supplied by the city, and that owing to alleged negligence and bad quality of the vaccine used her son's health was so seriously and permanently impaired as to prevent him from earning his livelihood. The city denied negligence, and pleaded that the boy was vaccinated with care and skill, and that the vaccine was the best in existence.

Personals.—Major Daniel P. Kappele, Hamilton, Ont., who is abroad as second in command of the Fifth Field Ambulance, has been promoted to the command of a field ambulance of his own and gets the rank of lieutenant-colonel.——Dr. Leeming Carr is the new chairman of the board of education, Hamilton, Ont.——Lieut.-Col. David W. McPherson, Toronto, who was in command of No. 2 Canadian Field Hospital in France with the First Division, has been placed in command of the Canadian Convalescent Hospital at Woodcote Park, Epsom, Surrey, England. Colonel McPherson was given a farewell dinner by his fellow officers in France, and presented with cut glass mounted in silver.——Dr. William D. Sharpe, Brampton, Ont., has returned home from Serbia.——Maj. Frederick B. Carron, a graduate of McGill University, and who was in practice in Brockville, Ont., before leaving for England with the second Canadian contingent, has been appointed supervisor of military hospitals in England.——Dr. J. R. Goodall, Montreal, has been appointed medical officer of the Second Brigade of the Canadian Expeditionary Forces, which comprise the Fourth, Fifth and Sixth Canadian Mounted Rifles, now in France.——Capt. James Roberts, M.O.H., Hamilton, Ont., is in charge of a base hospital at the Dardanelles. He has recovered from a recent illness.——Dr. John E. Hett has been reelected mayor of Berlin, Ont.——Dr. Charles C. Bell, Chatham, Ont., has accepted the appointment of assistant director of medical services at London, Ont.——Dr. David R. Moore, Stanley, N. B., has volunteered for active service.——Dr. J. F. Adamson, Edmonton, Alta., is attached to the Floriana Hospital at Malta.

Ontario Universities and the Medical Commission.—Prof. Alexander McPhedran gave evidence before the Ontario Medical Commissioner last week. He held that the final university examination was a more thorough test than that of the medical council. Professor McPhedran declared: "We put each student at the University of Toronto through a course of work with six patients and we make him demonstrate that he has a good working knowledge of the various diseases. Further, the student's final year is wholly practical rather than scientific. A record is kept of the student's work, so that it becomes impossible for him to make a pass showing during the year unless his standing is good." Professor McPhedran also stated to the commissioner that sometimes when the total percentage was not sufficient to qualify, the examiners would, if the student's record was exceptionally good, raise the percentage so many points to permit of him going through. President Falconer considered that the dual control of examinations by the universities and the medical council was humiliating, as once a student gets his degree he should be entitled to practice. Dr. Hibbert W. Hill for the Western University, London, agreed with the position taken by the University of Toronto. Mr. Osler, for the College of Physicians and Surgeons, pointed out that the representation of the universities on the council of the province would be proportionately larger when those which did not now teach medicine, would cease to be represented. He also maintained that the final examination by the council was necessary in order to show that after his five years' tuition at the university the student was really efficient for practice. He contended that there must be some common examination board before which the holder of the degree must go before being entitled to become a registered practitioner.

GENERAL

Cancer Research.—The ninth semiannual meeting of the American Association for Cancer Research will be held at the New Ebbitt Hotel, Washington, D. C., January 5, as a symposium on cancer research in conjunction with the Pan-American Scientific Congress.

Personal.—Asst. Surgeon-General Henry R. Carter, U. S. P. H. S., who has been ill with dengue in Porto Rico, has returned home convalescent.——Dr. Rudolph Tuesler, chief surgeon to St. Luke's Hospital, Tokyo, Japan, was the chief speaker at a dinner of the Church Club of the Episcopal Diocese of Michigan, at Detroit, December 9.

Coyotes Spread Rabies.—Surg. John S. Boggess, U. S. P. H. S., on December 20, was appointed executive officer to lead a campaign against rabies originating in coyotes and now said to be a menace to people and stock in California, Oregon, Nevada and Idaho.——Thirty persons supposed to have contracted rabies by the bites of coyotes have recently been treated at the State Hygienic Laboratory, Reno, Nev.

Organization of Indian Service Physicians.—A general organization of the physicians of the United States Indian Medical Service is being perfected by several physicians of that service. Because of inadequate compensation, insufficint authority in medical and sanitary matters, absence of reasonable expectation of promotion and coordinate organization, the physicians of this service, through its association, are planning an active campaign which will put the Indian Medical Service on a higher plane. The organization will ask for a chief medical officer whose authority in matters pertaining to his office is supreme; organization to be based on that of the higher government services; increase in salary and rank, which will be determined by length of service and efficiency. Former and active officers of the service are requested to correspond with the Temporary Secretary, "Association of the U. S. Indian Medical Service," Shiprock, N. M., or the treasurer of the association at Crozier, N. M.

Bequests and Donations.—The following bequests and donations have recently been announced:

Delaware and Homeopathic hospitals, Wilmington, Del., each $1,000, by the will of Sarah C. Hagany, Wilmington.

Boston Dispensary, a gift of $5,000, to the endowment fund from Shepart Brooks.

St. Luke's Hospital, Chicago, and Church Home for Aged Persons, each $5,000 to endow a free bed to be known as the Alma L. Kimball Bed, by the will of Miss Louise Edsall Kimball.

Maimonides Hospital, Chicago, an annual donation of $5,000 for maintenance of the hospital.

Laconia (N. H.) Home for the Aged, $50,000; Laconia Hospital, $10,000; Florence Crittenton Home Society, $2,000; Boston Floating Hospital, $1,000, by the will of Edward E. Taylor, Boston.

St. Christopher's Home for Babies, Brooklyn, $25,000, and also a trust fund of $125,000 on the death of certain beneficiaries.

Hospital for Deformities and Joint Diseases, New York City, $1,000, and bequests of $500 or $250 to ten other charitable institutions of New York and Brooklyn, by the will of Herman N. Flurchheimer, New York City.

Hospital of the University of Pennsylvania, Philadelphia, $3,000, to endow a bed in the Children's Ward in memory of Mr. G. Lee Knight, by the will of Helen T. Knight.

Seven charitable institutions of Philadelphia, provisional bequests in the will of Martin H. Stutzbach.

Belgian Scholarship Committee.—The Belgian Scholarship Committee has issued a circular letter of appeal for a fund to enable scholars, research workers, literary men and artists of Belgium to resume their work. It is proposed to give these worthy individuals assistance in England, Holland, France or wherever they may be, but in a few cases it is proposed to have the workers brought to this country. The committee has already received assurance from the George Washington University, Clark University and the state universities of Missouri and Florida that they will give free tuition to Belgian students. Belgian professors have also been temporarily engaged by Princeton, George Washington, Harvard and Yale universities and the University of Pennsylvania, the University of Chicago, and the Baltimore branch of Carnegie Institute. In one of these cases the honorarium has been partly paid by the committee. The committee undertakes to centralize all information and to act as a clearing bureau between the educational institutions of the United States and the Belgian victims of the war. The committee appeals especially to men interested in the development and diffusion of knowledge and art, and hopes that a liberal response will follow the appeal. Checks should be drawn payable to the Belgian Scholarship Committee, John Joy Edson, treasurer, 309 Wilkins Building, Washington, D. C.

FOREIGN

French Academy of Sciences Awards Prize to Wright.—The Académie des Sciences awarded seven prizes of from $100 to $10,000 at its recent annual meeting. The Le Conte prize, the largest one, was given to Sir Almroth Wright for his share in the introduction of systematic vaccination against typhoid. The Lannelongue prize of $400 was divided between Mmes. Cusco and Rück.

Prizes Offered by the Buenos Aires Academy of Medicine.—In commemoration of the centennial of the independence of Argentina, 1816-1916, the Academia de Medicina offers three prizes of 1,500 pesos each for the best works on biologic sciences, medicine or surgery, received in competition from Argentine scientists. It also offers a prize of 2,500 pesos

for the best unpublished work on a medical subject presented at the Congress of Social Sciences which is to be held at Tucuman, Argentina, July 9, 1916. This prize is open to any American member of the congress.

Deaths Abroad.—F. Tauszk, privat-docent of internal medicine at the University of Budapest, editor and publisher of the journal *Tuberculosis*, and general secretary of the Hungarian organization of the public sanatoriums for pulmonary affections, aged 50.——A. Blin, professor at the University of Rennes, aged 63.——U. Rose, instructor in internal medicine at the University of Strassburg, aged 44.——M. Nussbaum, director of the biologic laboratory of the University of Bonn, aged 65.——R. Ulrich, formerly professor of ophthalmology at the University of Strassburg, aged 67.——J. Erismann, professor of hygiene at the University of Zurich, aged 73. ——P. Baj, editor of the *Pensiero Medico* of Milan, aged 30.

Typhus in Mexico.—Reports from Mexico state that following the famine, typhus has broken out and that its fatalities are particularly heavy on account of the impoverishment of the people and the filth conditions prevalent. It is reported at Pachuca that there are about seventy deaths a day and it is said that typhus is causing as many deaths as starvation in the suburbs of the city of Mexico. Notices have recently been posted telling the public how to avoid typhus, but ignoring the principal cause of typhus, the body louse.——A telegram from Washington, December 24, states that the United States Public Health Service has learned that typhus fever has crossed the Rio Grande in Texas. Three cases have been found in Laredo where many Mexican refugees have gathered.

WAR NOTES

Surgical Dressings Shipped.—The surgical dressings committee of the Zander Ward of the Peter Bent Brigham Hospital, Boston, shipped seventeen cases of hospital supplies to the war zone last week.

New Ambulances.—The Vacation War Relief Committee has cabled to Mrs. Edith Wharton in Paris, the $12,000 contributed by Mrs. Daniel Guggenheim to equip five hospital motor cars for the use of the French army in Alsace.

Frauds in Medical Supplies.—A dealer in physicians' and hospital supplies was recently arrested at Milan for handling contraband drugs and for adulterating drugs. The Serbian government was one of the complainants, testifying that the goods supplied the Serbian army on a $40,000 order did not correspond in any way to the specifications.

Hospital Mortality Lowered.—Dr. Jacques Bertillon, director of medical statistics of the French army, in a special report, states that the mortality of the sick and wounded in hospital has been, for this year, only 18 to the 1,000. Last year the mortality was 53 to 1,000 and in peace time, the Paris hospitals showed a mortality of 106 to 1,000.

The Siegfried League.—With this name, a new society has been organized at Stuttgart, the members of which pledge themselves to abstain from intoxicating liquors as long as the war lasts. The officers include Professors von Froriep and von Grützner. The name was chosen because the mythical Siegfried had only the one vulnerable spot where the dragon's blood had not touched him.

Aid Asked for War Hospital.—Dr. James E. Stowers, Millersburg, Mo., and Dr. Ralph R. Fitch, Rochester, N. Y., who are conducting at their own expense, a hospital at St. Valery en Caux, Seine Inférieur, France, have appealed for help. The American Red Cross withdrew from the hospital, October 1. Drugs, hot-water bottles and hospital supplies are needed. The hospital has a capacity of about 150.

Exchange of Medical Prisoners of War.—According to an agreement between the German and British governments, a number of German physicians and pharmacists taken prisoners by the British in southwestern Africa have been exchanged for a corresponding number of British medical men in German hands. Seventeen German physicians with their families from Africa have thus reached Berlin by way of Rotterdam.

Hospital Ships Reported Sunk.—The steamer *Cambria*, formerly owned by the London and Northwestern Railway Company, but recently transferred to the admiralty service as a hospital ship, is said to have been sunk in the English Channel, December 20.——The British hospital ship *Anglia* is reported by an Associated Press telegram to have been sunk by a mine in the English Channel, November 17. Three hundred men were saved out of a total of 385.

Losses of the University of Berlin in the War.—According to the *Klinische-therap. Wochenschrift* of November 1, there have been twenty-seven victims of the war among the students in the medical department, 129 in the department of philosophy, thirty-one in theology and forty-eight in the law department. Five of the members of the teaching force have also been victims, Professors Piper, Jochmann and Kramer, and the assistants at the physiologic and Pharmaceutic institutes, Drs. Frankfurther and Shaw.

Recovery of Wounded Soldiers and Return to the Ranks.—The *Münchener medizinische Wochenschrift* quotes a Russian daily to the effect that there is great complaint in Russia that only 18 per cent. of the wounded soldiers recover sufficiently to return to the ranks, while the Germans report that 60 per cent. are returned to the front. The Russians regard this ratio of 60 to 18 as testifying to superior technical skill in treating the wounded. Our exchange comments, "The German physician-surgeon and the German technician may prove to be the most powerful force which the Allies have to combat."

Financial Aid for Civilian Physicians Serving in the War.—Collections and other schemes for ensuring pecuniary aid to the families of the medical men who have gone to the front are being inaugurated on an extensive scale in the countries of all the belligerents. The profession in each country is struggling with the problem, and facing the additional problem of support for the physicians when they return home after the war until they regain their financial footing. The fund being raised by the Vienna Medical Society for the purpose was started with the $400 recently received by E. Pick as the Goldberger prize for his research on anaphylaxis.

News of Relief Parties.—Final arrangements are being made for the departure of a party of twelve physicians and nurses which is being sent to the aid of the suffering inhabitants of Montenegro. More than 600,000 pounds of food supplies and medicine have been collected and already sent to Montenegro.——The Harvard surgical unit left London, December 6, to begin its duties on the western war front.——A second detachment of physicians and nurses sent for relief work in Germany and Austria by the American Physicians' Expeditions Committee, sailed for Europe, November 25, on the *Heilig Olav*.——Miss Emma Duensing, head nurse of the first American medical relief expedition which was sent to Germany early in September, died from septicemia at Oppeln, Silesia, November 5.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended Dec. 25, 1915, lists the following contributions:

Brooklyn Medical Society, Brooklyn, N. Y.	$ 25.00
Receipts for the week ending December 25	$ 25.00
Previously reported receipts	7,905.86
Total receipts	$7,930.86
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 620.82

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

Red Cross Activities.—The American National Red Cross has transmitted to the secretary of the state, a petition asking that safe conduct of a shipment of milk, for babies in Germany and Austria-Hungary threatened by starvation by the shortage of milk in that country, be arranged with the allied powers, and that if such safe conduct be granted, the distribution of the milk shipped will be made by the Red Cross or in any other way that may be acceptable to the allies. This petition was transmitted at the request of the Citizens' Committee for Food Shipments, a charitable organization with headquarters in New York City.——The Austrian Red Cross has fitted out two volunteer relief and medical bodies for service in the Balkans. One will take charge of the 500-bed hospital which has been established in the Gladstone Gymnasium School at Sofia and the other will be available for field work.——During the first year of the war the American National Red Cross sent to Europe 671 medical men and 253 nurses for this work. Of this body, 5 units were sent to France, 2 to Russia, 2 to Germany, 2 to Austria, 3 to Serbia and 2 to Belgium.

BERLIN LETTER

BERLIN, Nov. 16, 1915.

Personal

Prof. Jakob Wolff, a practicing physician of Berlin, who made extensive historical researches on the subject of cancer, was awarded the Martin Brunner (Nuremberg) prize of 1,800 marks (about $430). This foundation was established about three years ago by Mr. Brunner, an artist of Nuremberg. He donated 50,000 marks (about $12,000), the interest of which was to be awarded as a prize annually to the person who contributed the best work on the etiology and treatment of cancer. The present award is the first one to be made.

Krupp Family Gives to Charity

The Krupp family of Essen has donated 50 million marks ($12,500,000) representing the increase in profits, the result of the war, for civil betterment work. Of this sum, 21 million marks ($5,250,000) was to be set aside as a fund for the families of those killed in the war or of those severely injured. Besides this, 4 million marks ($1,000,000) have been set aside to be used to help those suffering by and through the war, especially the inhabitants of the eastern marches, and the income from 25 million marks ($6,250,000) is to be applied especially to the officials and workmen of the Krupp factories.

Prices of Food in Berlin

The manifesto issued by the government regulating the price and distribution of foods and food products appears to have created the impression that Germany is hungry or that such a state of affairs is imminent. How little truth there is in statements based on such belief is shown by consulting the price lists issued in Berlin, November 11. The considerable decrease in the price of foods shows conclusively not only that there is sufficient food on hand, but also that the higher prices prevailing previously were the result of the business methods of producers and dealers. Finally, we must appreciate the fact that the government regulation of food prices is of immense value to the people, inasmuch as foods are now being sold at their actual value and not at an inflated value created by individuals who are desirous of earning large profits. The average price per hundred pounds of living calves fell from 94 marks ($23.50) to 77½ marks ($19.37) during the week of October 25-30 and November 1-6; for pigs, the price fell from 145 marks ($36.25) to 102½ marks ($25.62); for one pound of butter it fell from 2.77 marks (69.25 cents) to 2.53 marks (63.25 cents).

The Law and "Christian Science"

In spite of the great interest commanded by the war situation, the law suit in Berlin against two female Christian Scientists has commanded a considerable share of public attention. These two women were charged with having contributed through negligence to the death of two well-known actresses, one of whom was suffering from diabetes and the other from mycosis fungoides. Both patients were doing very well under medical care, but, acting on the advice of relatives and friends, they turned to Christian Science, and while being treated by the two Christian Science practitioners mentioned above their condition became progressively and continuously worse until it was too late to render medical assistance. After several days of discussion in the courts, the two women were sentenced to six months' imprisonment. The basis for this sentence imposed by the judge will probably be of interest to the readers of THE JOURNAL. As was shown repeatedly during the course of the trial, "Christian Science" had its origin in America. The cult claims a large number of followers, and our American colleagues therefore probably come in contact with "Christian Science" more often than we do over here. The ruling of the court was as follows: The court holds that this teaching, so far as it applies to treatment of disease in general, is a mistaken one (*Irrlehre*). Opposed to this belief is the testimony of witnesses who claim to have been healed from a variety of diseases. The statements of these witnesses, however, are based not on facts but on opinions. Further, these opinions are based on wrong conclusions, or the conclusions are not interpreted correctly. It must be admitted that under certain conditions this teaching and its promulgation is productive of favorable results, but only in cases in which there is needed strengthening of energy or self-confidence as, for instance, in the case of those who are suffering from imaginary ills, in hypochondriasis, nervousness, hysteria and similar mental states; perhaps, too, in the early stages of organic lesions but not in the case of a severe organic lesion. The question arises, therefore, whether the two defendants are directly responsible for the death of their patients by having shortened their term of life. Expert opinion has shown that if these patients had remained under the care of physicians, the first one could have lived for years, and the death of the second could have been postponed. The question is: Can a verdict be rendered against the defendants? It is the opinion of this court that the defendants are guilty of grave negligence because of having undertaken the treatment of such serious diseases when they were wholly ignorant of the subject from a medical standpoint. Furthermore, they also committed a breach against the teachings of Christian Science which says that practitioners should withdraw from the treatment of any patients when it is evident that the disease is taking an unfavorable course and they are warned to observe closely whether the disease is growing worse. The testimony in these cases has shown that the condition of both patients had become so much worse that it was noted by other persons. Therefore, the defendants surely should have noted it. The rapidly increasing severity must have shown the defendants that death might take place if the patients remained in their care. They were not asked to secure a physician, but it was undoubtedly their duty to inform their patients that they were unable to do anything more for them, and further actions would depend on the patients themselves. If this had been done, these patients would undoubtedly have sought medical advice, and had such been secured, the patients, although perhaps they might not have been cured, would have had their lives prolonged. The case, then, is one of involuntary homicide. With regard to the punishment there enter into consideration these circumstances: that this is a form of treatment that is not based on any actual knowledge, that it is a treatment which has nothing in common with the German spirit, German ways and German feelings; it is based on an assumption and is not in unison with the justice of God and far removed from real Christianity as well as from science. Furthermore, the victims were two highly gifted artists, favorites of the public and of the royal stage.

PARIS LETTER

PARIS, Dec. 2, 1915.

The War

AMERICAN AID IN THE EDUCATION OF WAR CRIPPLES

Under the presidency of Mr. William D. Sharp, ambassador from the United States, a meeting of the American colony in Paris was recently held at the American chamber of commerce. Mr. G. J. Shoninger, president of the Union des colonies étrangères en France en faveur des victimes de la guerre, explained the purpose of the society and requested the aid of Americans in the work of giving practical instruction to crippled soldiers so as to enable them to earn their living. The amount required to supply the needs of a crippled soldier during the necessary period of apprenticeship is about 500 francs ($100). From subscriptions already received, the society is now able to count on an annual revenue of 30,000 francs ($6,000).

The meeting unanimously voted for the formation of an auxiliary American committee to collect funds. It was decided, moreover, that the society would endeâvor to cooperate closely with the governmental authorities and the other societies in France to coordinate all efforts for this purpose.

IMMEDIATE TREATMENT OF PATIENTS SUFFERING FROM CHLORIN GAS POISONING

At a recent session of the Société médicale des Hôpitaux de Paris, Dr. G. Lion, physician of the hospitals, who witnessed a German attack with chlorin gas October 19, read an interesting paper on this subject. He emphasized particularly the predominance of acute pulmonary edema among the serious immediate results. He laid stress on the necessity in certain cases of bleeding the patient immediately. The first sensation experienced is a strong odor of chlorin, then a pricking of the eyes, the nose, the pharynx and larynx, then a more or less painful cough, oppression and some palpitation. In the lighter cases these are all the manifestations. In the medium cases there are signs of bronchitis and some zones of fine râles. In serious cases cyanosis, dyspnea and abundant frothy, yellowish expectoration indicate acute pulmonary edema. In certain cases a soldier at first affected by gas feels capable of going back on duty but in the evening all at once he presents serious pulmonary edema. In the medium cases the soldier should be imme-

diately taken to the ambulance, if possible. Moreover, there is little to be done to prevent serious complications (injection of milk or of hot water to produce vomiting; the use of ipecac is disputable and is to be reserved for patients not too greatly depressed). When serious conditions are presented early, bleeding is indicated to counteract a marked degree of pulmonary edema. Lion found bleeding easy, the blood spurting out in a jet; but he thinks that if bleeding is too much delayed it may become impossible. Bleeding will obviate, at least for a certain time, the danger of death from acute asphyxia. Lion advises, moreover, injections of ethero-camphorated oil and of oxygen but not injections of morphin. He concludes that, in spite of all efforts, therapeutics will often be powerless and that prophylactic means cannot be too greatly perfected.

FROZEN FEET IN THE WAR

At a recent session of the Société de médecine de Paris, Dr. Léon Salignat spoke of the symptomatology, etiology, pathogenesis and treatment of frozen feet, which are particularly frequent in the present war. He emphasized especially circulatory and trophic disturbances. From results that he has obtained in his service Salignat recommends treatment by local vapor bath. He believes that it would be easy and not expensive to construct a movable apparatus for vapor baths. The treatment begun in the hospitals at the front should be completed, at the end of four or five days, in the base hospitals. This would make it possible to avoid amputations and to send back speedily to the armies many men completely restored to strength.

SOLDIERS' BEDS IN TRENCHES

This subject was recently discussed by the Société de médecine de Paris. Dr. Klotz remarked that the straw which is used for the soldiers' beds is rarely renewed. He suggested giving the men hammocks like those of sailors. Dr. Butte agreed with Dr. Klotz; he has observed a case of syphilis which could be explained only by infection of this kind. Dr. Berillon thought it would be practical to replace the hay by turf, which is antiseptic, inexpensive and easy to obtain.

MEASURES FOR THE AID OF TUBERCULOUS SOLDIERS

A law has just been promulgated which gives the minister of the interior a fund of 2,000,000 francs ($400,000) for assistance during the war for soldiers dismissed for tuberculosis. The municipal council of Paris has just voted 60,000 francs ($15,000) for hospital care for tuberculous soldiers.

Death of Dr. Millard

Dr. A. Millard, former physician of the hospitals of Paris, has just died, aged 85. He was the oldest of the physicians of the hospitals of Paris, and had instructed pupils among whom he had the good fortune of counting twenty physicians of the hospitals and professors. He gave his name to the sign of alternate hemiplegia (syndrome of Millard-Gubler). For nine years he had represented his colleagues on the advisory board of the Assistance publique of Paris.

The Moxon Gold Medal Awarded to Professor Dejerine

The Royal College of Physicians of London has awarded the Moxon gold medal to Dr. Dejerine, professor of the clinic of the diseases of the nervous system at the Faculté de médecine de Paris. This medal is awarded every three years to the scientist whose observations and researches in clinical medicine are deemed to render him most worthy of this distinction. The award of the medal is not reserved for scientists of British nationality, but up to the present it has been given only to English clinicians: Sir Alfred Garrod (1891), Sir William Jenner (1894), Sir Samuel Wilkes (1897), William Tennant Gairdner (1900), John Hughlings Jackson (1903), Jonathan Hutchinson (1906), Sir William Richard Garvers (1909), Sir William David Ferrier (1912).

Operating by Red Light in Connection with Roentgenoscopy

At a recent session of the Académie des sciences, Dr. J. Bergonié, professor of biologic physics and of the clinic of medical electricity at the Faculté de médecine de Bordeaux, explained a new method which, after repeated trials, appears to meet the needs of surgical roentgenoscopy (in the removal of foreign bodies), while not interfering with the work of the operator and his assistants. The operation is performed in a darkened room. The operative field is lighted up by intense saturated red light coming from a source analyzed by the spectroscope and giving neither green nor yellow rays. Not only do the surgeon and his assistants operate easily in this light but also their visual sensibility is conserved or augmented during the operation. The colors of the radiations emitted by the fluorescent screen played on by the Roentgen rays are green and yellow, and the green roentgenoscopic images afford a sharp contrast to the red light. Thus when the red light is turned off and the Roentgen rays below the operative field substituted for it, the images on the screen are immediately and clearly perceived by all. As soon as the indications furnished by this momentary roentgenoscopy have been thoroughly observed, discussed by the assistants, if this is necessary, the screen protected by sterile tissue is removed from the operative field and the operation continues by red light. Thus by successive alternations of brief roentgenoscopies and operation by red light, roentgenoscopy guides the surgeon and his assistants whenever they need it, their hands being easily kept outside of the Roentgen-ray field and the active part of the operation being performed by red light altogether. It is to be noted that by monochromatic red light tincture of iodin is almost colorless, arterial blood is slightly tinted, venous blood is quite different and the slightest beginning of asphyxia in anesthesia is evidenced by an almost black coloration.

LONDON LETTER

LONDON, Dec. 10, 1915.

Death of Dr. Millican

I regret to announce the death at the age of 62 of Dr. Kenneth William Millican, B.A. (Cantab.), M.R.C.S., L.R.C.P., assistant editor of the *Lancet*, and formerly assistant editor of THE JOURNAL. He was born at Leicester and graduated with honors in the classical tripos at Cambridge. He was appointed laryngologist at the Infirmary for Consumption and the West End Hospital for Paralysis. He wrote an essay on the development and evolution of morbid germs in which he anticipated on theoretical grounds many of the views subsequently held by bacteriologists. In 1892 he left London and became in succession a ship surgeon and medical officer to mining works in Mexico and California. In 1897 he became associate editor of the *New York Medical Journal*, and six years later editor of the *St. Louis Medical Review*. He next joined the staff of THE JOURNAL. In 1911 he returned to England on being appointed subeditor of the London *Lancet*. He was a man of a modest and ingenuous disposition, most genial and courteous, but outspoken in denunciation of what he conceived to be wrong. His loss will no doubt be as much regretted by his wide circle of American friends as it is on this side of the Atlantic.

The Mortality of Childbirth

A report on the mortality of childbirth has just been published by Dr. A. Newsholme, medical officer of the Local Government Board. He shows that in some parts of the country this is still excessive. The majority of the deaths are due to puerperal fever, hemorrhage or convulsions. The death rate of mothers in the last four years from complications of pregnancy and childbirth amounted to 4 per thousand births—one third of which were due to puerperal infection. The mortality from conditions other than puerperal fever is much higher in the provinces than in London, probably because of the much greater accessibility of skilled assistance in the latter. On the other hand, the records of London with regard to puerperal fever are no better than those of the provinces. A substantial reduction in puerperal mortality has been secured in the present generation. The rate is now 30 per cent. lower than in 1871. It is far from satisfactory, however, that in 1914 one mother out of every 644 lost her life from puerperal fever. The mortality from childbirth is higher in Wales than in England (5.75 against 4), but in certain parts of England, textile towns in particular, the mortality is still higher than in Wales. This difference is attributed to a lower standard of cleanliness of midwives or other women who assist the mother. The lowest mortality prevails in London and the south of England, where it is 3 per thousand births.

Shortage of Dental Practitioners

The institution of a diploma in dental surgery took place comparatively recently in this country. The result is that the number of qualified dentists is far short of the requirements of the population, and that a large number of unquali-

fied men practice. They are not prevented from doing this, but they must not call themselves dentists. This is a very small drawback, as they can exhibit sets of teeth and call themselves "tooth specialists." At a meeting of the General Medical Council, Mr. Tomes, chairman of the Dental Education and Examination Committee, submitted a report on the shortage of dentists. Communications had been made with the various licensing bodies for the possibility or curtailment of the curriculum without lowering the standard of dental practice. Some of the bodies questioned the existence of any shortage, pointing out that many qualified men are not fully occupied, the public being unconvinced of their advantage over the unqualified. Attention was also drawn to the lowering of the social status which arose from the intrusion of great numbers of unqualified persons, and to the fact that business men who had acquainted themselves with the existing state of things often considered that from a business point of view qualification was worthless or even a hindrance, and so did not put their sons at dental schools. The Incorporated Dental Hospital of Ireland alone considered the possibility that the simpler dental requirements sought by the poorer classes might perhaps be met by a lower grade of practitioner, though this was also suggested in one of several letters sent by private practitioners. The main conclusion was that no appreciable increase in the members of the dental profession can be looked for until the law gives further protection to the qualified man against the unqualified. A very insidious form of deception was pointed out. An unqualified man dare not put on his plate "dental surgeon," as this would render him liable to prosecution. This is avoided by putting beneath his name "dental surgery," which can be done with impunity.

Mortality from Measles Doubled

The Local Government Board issued an order applying throughout England and Wales a system of notification of measles and German measles, and enabling local authorities to undertake measures for the care of patients suffering from these diseases. It is hoped that health officers, as soon as this order comes into operation, will keep the local military authorities advised of cases of measles in their districts in the same way as is now done in regard to other notifiable infectious diseases. During the present year there has been a large increase in the mortality from measles. The average number of deaths occurring annually from this disease in recent years in England and Wales is 11,000, of which the great majority are deaths of children under 5 years of age. During the first half of the present year the number of deaths reached a total of 12,414. Representations have also been made by the Army Council that measles has caused a large amount of disablement among the troops in this country, and that accurate information of the presence of the disease among the civil population would be of the utmost benefit to the military authorities.

Latin Not Necessary for Medical Degree

At the annual meeting of the court of governors of Sheffield University it was agreed, in view of the great demand for physicians, to give effect at once to a resolution that a knowledge of Latin should be no longer required as a condition of admission to the medical faculty. A new ordinance was agreed to, giving the senate power to waive the examination for the bachelor's degree in any faculty other than that of medicine in the case of any student whose studies had been interrupted by war service.

Marriages

WILLIAM SPENCER HARVEY, M.D., Chicago, to Mrs. Allie McHenry Cartwright of Nashville, Tenn., at San Francisco, December 11.

EDWARD FRANKLIN YOUNGER, M.D., Lynchburg, Va., to Miss Florence Tait Walmer of Bluffton, Ind., December 8.

JAMES JAY TYLER, M.D., Warren, Ohio, to Miss Ruth Marguerite Meals of Oil City, Pa., December 8.

GEORGE B. BREEDLOVE, M.D., Martinsville, Ind., to Mrs. Callie M. Mitchell at Indianapolis, December 8.

CLAUDE MEEK POFF, M.D., to Miss Christine Holly Stoltzfus, both of Tuleta, Texas, December 8.

OTTO J. YELT, M.D., Toulouse, France, to Mdlle. Rita Gay at Rouen, France, November 9.

Deaths

Martin L. Belser, M.D. University of Michigan, Ann Arbor, 1891; aged 46; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; a veteran of the Civil War, in which he served as lieutenant in the Thirty-First Michigan Volunteer Infantry; for five years major and surgeon in the Michigan National Guard, and from 1891 to 1895 an instructor in his alma mater; a well-known practitioner of Ann Arbor, Mich.; died in Hickory, N. C., December 15.

Henry Clay Fairbrother, M.D. Washington University, St. Louis, 1872; aged 70; a Fellow of the American Medical Association; a veteran of the Civil War; originator of the East St. Louis park system; a director of the Illinois State Bank; surgeon to many of the railways centering in East St. Louis; for several terms a member and president of the local school board; died at his home, December 15, from heart disease.

Mary Hawes, M.D. Laura Memorial Women's Medical College, Cincinnati, 1899; aged 50; formerly a Fellow of the American Medical Association; lecturer on histology and embryology and assistant in gynecology in the Denver and Gross College of Medicine, Denver; physician in charge of the Florence Crittenton Home; assistant in gynecology at St. Anthony's Hospital, Denver; died at her home in Denver, December 8.

Charles Henry Bushnell, M.D. Bennett Medical College, Chicago, 1896; aged 55; a Fellow of the American Medical Association; president of the Illinois State Eclectic Medical Society in 1909; attending obstetrician to Cook County Hospital, attending gynecologist to Lake View Hospital and attending surgeon to the Chicago Union Hospital; died at his home in Chicago, December 19, from heart disease.

Charles Alfred Haffner, M.D. College of Physicians and Surgeons in the City of New York, 1896; aged 40; a member of the Medical Society of the State of New York; attending physician to the Roosevelt Dispensary and Bloomingdale Clinic, New York; died at his home in New York City, December 14, from pneumonia following an operation for appendicitis.

Hubbard Kavanaugh Hinde, M.D. Washington University, St. Louis, 1857; aged 81; for twenty-four years a member of the staff and superintendent of the Fulton State Hospital; a veteran of the Civil War; well known as an educator and president of Howard-Payne College, Fayette, Mo.; died at the home of his daughter, in Fulton, Mo., December 10, from pneumonia.

Herman Peter Gerbert, M.D. College of Physicians and Surgeons in the City of New York, 1883; aged 57; ex-president of the Orange Mountain (N. J.) Medical Society; city physician of Orange from 1905 to 1908; president of the Orange Memorial Hospital Dispensary; was found dead from heart disease in his apartment in Orange, December 19.

Charles Marcus Compton, M.D. Northwestern Medical College, St. Joseph, Mo., 1893; aged 55; formerly a Fellow of the American Medical Society; a member of the Oklahoma State Medical Association; a physician in the United States Indian Service; was found dead from heart disease at his home in Coyle, Okla., November 8.

Henry Francis Dunlavy, M.D. Missouri Medical College, St. Louis, 1871; aged 70; formerly a Fellow of the American Medical Association; a member of the Iowa State Medical Society and once president of the Taylor County (Iowa) Medical Society; a veteran of the Civil War; died at his home in Bedford, Iowa, December 3.

George William Peck, M.D. Rush Medical College, 1890; aged 74; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; a practitioner of California for half a century and a veteran of the Civil War; died at his home in Sawtelle, Calif., December 14.

John Hamilton Kemp, M.D. University of Pennsylvania, Philadelphia, 1900; aged 36; a Fellow of the American Medical Association and assistant at the Medical Dispensary of Howard Hospital, Philadelphia; died at the home of his sister in Philadelphia, December 14, from disease of the kidney.

Christopher Algernon Harvey-Sparks, M.D. Meharry Medical College, Nashville, Tenn., 1910; aged 32; was instantly killed in an explosion of gasoline which devastated the city of Ardmour, Okla., September 27.

George I. Mays, M.D. Marion-Sims College of Medicine, St. Louis, 1899; aged 47; of Joplin, Mo.; city physician from 1902 to 1904; also a member of the board of public works; died in St. John's Hospital, Joplin, December 10, from pneumonia, following an operation for the removal of gallstones.

Henry S. Metcalf, M.D. Northwestern University Medical School, 1886; aged 62; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; died at his home in Mount Carroll, Ill., December 15, from septicemia due to an operation wound.

Frank Holly Stuart, M.D. Kentucky School of Medicine, Louisville, 1887; aged 67; for many years a member of the surgical staff of the Northern Pacific and division surgeon to the Great Northern Railroad; died at his home in Baudette, Minn., December 7, from heart disease.

Robert Ansley, M.D. Rush Medical College, 1902; aged 43; a Fellow of the American Medical Association, and a veteran of the Spanish-American War; at one time health officer of Indiana Harbor; died at his home in Indiana Harbor, December 15, from hemorrhage of the stomach.

Robert Bruce House, M.D. Homeopathic Hospital College, Cleveland, 1869; aged 69; a member of the staff of the City Hospital, Springfield, Ohio; for many years a member of the local board of health; died at his home in Springfield, December 11, from ptomain poisoning.

Walter Ernest Seymour, M.D. University of Pennsylvania, Philadelphia, 1898; aged 40; formerly a member of the Rhode Island Medical Society; of Riverside, R. I.; died at his home in East Providence, R. I., December 6, following an operation for appendicitis.

Charles J. Frazier, M.D. Albany (N. Y.) Medical College, 1873; aged 65; a member of the Medical Society of the State of New York; health officer of Cobleskill and coroner of Scoharie County; died at his home in Cobleskill, October 21, from pneumonia.

Matthias Riser Perry, M.D. Jefferson Medical College, 1866; aged 72; for many years a practitioner of Russellville, Ky., but for two years a resident of Southport, Ky.; died at the home of his son in that place, December 4, from cerebral hemorrhage.

David A. Cox, M.D. Medical College of Ohio, Cincinnati, 1890; aged 50; formerly a Fellow of the American Medical Association; secretary of the Board of Health of Howell, Ind.; died at his home in Howell, December 17, from septicemia.

Leonard L. Knapp, M.D. University of Michigan, Ann Arbor, 1883; aged 64; formerly a member of the State Medical Society of Wisconsin; died in St. Luke's Hospital, St. Paul, December 14, from pneumonia complicating typhoid fever.

John Harold Hay, M.D. University of Michigan, Ann Arbor, 1913; aged 27; resident pathologist at St. Francis' Hospital, Pittsburgh; died at St. Francis' Hospital, December 2, from complications following an operation for duodenal ulcer.

O. S. Ewing, M.D. Gate City Medical College, Texarkana, Texas, 1907; aged 40; a member of the State Medical Association of Texas; for two terms health officer of Fannin County; died at his home in Leonard, Texas, December 11.

John N. Taylor, M.D. Missouri Medical College, St. Louis, 1878; aged 66; founder of the Boys of Woodcraft and a well-known practitioner and druggist of Jacksonville, Fla.; died at his home in that city, December 11.

William Epapthroditus Thomas, M.D. College of Physicians and Surgeons in the City of New York, 1895; aged 52; of Brooklyn; died in the German Hospital in that city, December 14, from pneumonia.

A. M. Parsons (license, West Virginia, 1899), aged 49; of Branchland, W. Va.; who is said to have shot a neighbor on October 3; was shot from ambush and instantly killed by the neighbor's son an hour later.

Benjamin F. Hart, M.D. University of Louisville, Ky., 1852; aged 85; formerly of Sweet Springs, Mo.; died at the home of his daughter in Seattle, December 9, from cerebral hemorrhage.

Ellen C. Brensinger, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1885; aged 69; of Philadelphia; died suddenly, December 5, while in church, from heart disease.

James H. Wright (license, New Jersey), died at his home in Newark, N. J., October 17.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

PROTONUCLEIN AND PROTONUCLEIN BETA

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication. W. A. Puckner, Secretary.

Protonuclein, with other products of Reed and Carnrick, was examined by the Council in 1907 and found ineligible for admission to New and Nonofficial Remedies. According to the patent specifications, it is prepared "from the thyroid and thymus glands, brain (pineal glands and pituitary body), bone-marrow, pancreas, spleen, liver, salivary glands, Brunner's glands, Lieberkühn's follicles and peptic glands." These various glandular bodies, it is said, are dried at a temperature below 130 F. (preferably between 100 and 110); the fat is removed by ether, the dried glands disintegrated, the connective tissue removed by sifting and the resulting powder coated with an ether solution of benzoin and mixed with milk sugar. The dose is three to ten tablets (9 to 30 grains) daily.

Protonuclein Beta is said to be produced by the addition to Protonuclein of an equal amount of nucleoplasm and protoplasm of the spleen. The dose is from two cubes (each 5 grains) three times a day to three cubes four times a day (30 to 60 grains daily).

Special advantages over ordinary nuclein are attributed to Protonuclein, in which, it is claimed, certain unaltered cells remain that are more easily assimilated by the leukocytes than are ordinary proteins, thus leading to a multiplication of cells. In the early advertising Protonuclein was claimed to be:

". . . an exact physiological product derived from the lymphoid structures of the body without the use of chemical agents. . . . So delicate is Protonuclein that any chemical agent is liable to disturb its cellular activity."

After its examination of the product in 1907 (The Journal, Oct. 5, 1907, p. 1198), the Council concluded that any distinction between the action of Protonuclein and that of ordinary nuclein was purely speculative and highly improbable. "If the active ingredients are really so unstable that they are destroyed by all chemical agents, as claimed, it seems impossible that the activity would be preserved when Protonuclein is given by mouth and therefore subjected to the very profound changes of digestion."

At that time the importance of thyroid as an ingredient had not been emphasized. The following year, however, Hunt and Seidell (The Journal A. M. A., Oct. 24, 1908) reported the results of an investigation which showed that Protonuclein was a diluted thyroid preparation, as skilfully disguised as in the antifats Rengo and Marmola. Hunt later pointed out (The Journal, Feb. 1, 1913, p. 384) that the amount of nuclein contained in a dose of Protonuclein probably would not have the slightest effect, especially when given by mouth.

The following are extracts from the Protonuclein advertising matter:

"For cancer, infectious fevers (measles, scarlet fever, typhoid and septicaemia) and as a prophylactic."

"Protonuclein: An ideal prophylactic for all infectious Diseases."

"A true alterative and tissue builder."

"The value of Protonuclein depends upon its ability to increase cell power and promote tissue strength. It is therefore needed whenever the organism is below the normal standard, more especially in Anaemia, Typhoid, Neoplasms and as a Prophylactic."

All the foregoing claims and recommendations are supposed to be based on certain alleged discoveries which the Council has previously characterized as "a tissue of vague speculations . . . in direct conflict with the known facts

of physiologic chemistry." As for the third claim, Hunt and Seidell have commented on the danger of recommending thyroid, the most powerful tissue-destroying drug known, as a "tissue builder."

Protonuclein Beta, it is said:

". . . combines the reconstructive action of Protonuclein with the action of the vital principle of the spleen, making it a distinct product for use in all tubercular troubles, including phthisis, localized joint affections and scrofular conditions."

This product, according to the manufacturers, is based on the work of a certain Dr. Bayle of Cannes, France. Dr. Bayle said that he had treated tuberculous patients with fresh ground up spleen of hogs (25-100 grams per day), mixed with fruit preserve or bouillon; in cases in which this brought on gastro-intestinal disorders, extract of the spleen pulp was administered hypodermically. Bayle reported extraordinary improvements in the physical and mental conditions of his patients even after a few days of this treatment; over 90 per cent. of his tuberculous patients, according to him, improved or were cured. This applied to all types and stages of tuberculosis in man. "With the spleen pulp treatment tuberculous glands disappear like syphilis lesions on administration of mercury and iodids."

This "spleen specific" of Bayle lacks scientific foundation; Bayle's own cases were not adequately controlled, and no notice has been taken of Bayle's report by experts on tuberculosis. Hence it practically lacks both confirmation and contradiction.

The spleen is invaded by tubercle bacilli quite as frequently as are the kidneys and the liver; it has no special toxic action on these bacilli. Nor is there any reason to believe that the end products of gastric and intestinal digestion of spleen pulp, after absorption into the blood, exert such toxic action. It cannot be assumed that these end products indirectly aid the healing processes through improved metabolism, for there is no evidence that they have any specific nutritive or stimulating action after such absorption. Altogether, what we know of the physiology and pathology of the spleen does not warrant us in looking for a "specific" against tuberculosis in this organ.

If, however, the known facts did justify any hope that the spleen might furnish such a specific, manufacturers would not be warranted in exploiting or physicians in prescribing spleen products as a remedy for tuberculosis until control experiments on animals had confirmed the therapeutic value of these products. In a chronic disease like tuberculosis, no conclusions that are scientifically valid can be drawn from clinical cases until many cases have been observed for years under suitable conditions. Right here it may be said that the clinical "evidence" offered in favor of Protonuclein Beta is worthless. The observations which have been reported on this product are not such as to permit any valid final conclusions to be drawn with regard to its value.

The rational method of proving the worth of an alleged new specific such as this is by animal experimentation. So far as we know, neither Dr. Bayle nor the Reed and Carnrick company has performed any such experiments with "spleen pulp" or Protonuclein Beta; nor are we aware that any competent investigator has done so. There is, to the best of our knowledge, no scientific evidence on which to base the claims for Protonuclein Beta.

The Council reaffirms its former action with regard to Protonuclein. The objections made to Protonuclein apply with equal force to Protonuclein Beta. In view of the lack of evidence, the claims for Protonuclein Beta are unwarranted and the product is ineligible to N. N. R. on account of noncompliance with Rules 1, 6 and 8.

Marriage Among Defectives.—Marriages of people of different social rank, even of one who is rich with one who cannot bring a sufficient sum of money to the joint exchequer, are daily prohibited, and the world approves such caution. Yet we look on complacently to see a man or woman mated with one coming from a stock unsound to the core, and we have not the courage to cry out at such inhumanity toward their offspring.—E. M. Sandwith, *Clinical Jour.*, Sept. 1, 1915.

Correspondence

"Practical" Medical Publications

To the Editor:—From the standpoint of the general practitioner, it is regrettable that there are physicians in practice who do not regularly receive and read THE JOURNAL. It is the one periodical publication which seems absolutely indispensable, the one which keeps a man abreast of the times.

It is still more regrettable that there are so many of those publications which some practitioners call "practical," and which no one of reasonable understanding can read without disgust. For instance, let me quote one or two items from the December, 1915, number of a medical publication which purports to cost one dollar a year, but somehow comes indefinitely once the publisher obtains your address, and never appears to require a payment on subscription. These quotations are from the bona fide reading matter, if we may so call it, and not from the advertising or fake reading notice pages.

On the cover appears this gem:

Dr. ———, of ———, writes:—I cannot get along without the ———.

From an editorial article on the treatment of pneumonia:

Carbonate of ammonia (sic) was at one time supposed to exert a liquefying effect upon the blood. . . . It is also a useful stimulant and quick in action. . . . The room should also be saturated with the fumes of ammonia, which seem to soften the air and make breathing easier.

Think of it—an editorial in a medical journal! Further the article suggests that it is well to:

Keep the patient in a prone position with his head not too high.

In other words, make him bite his pillow!

Then there is a little item credited to Sajous, as follows:

Nasal polypi can sometimes be destroyed by:
℞ Acid carbol ..... mili
Aquae ..... 1 ounce
M. Sig.: Inject a few drops into substance of polypus.

The idea, evidently, being to save wire and make the patient realize the seriousness of his affliction.

On another page we discover this therapeutic gem:

FOR RIGIDITY OF PERINEUM

℞ Chloroform ..... 2 parts
Ether ..... 1 part
Eau de cologne ..... 1 part
M. Sig.: For external use.

It would be instructive, and perhaps also amusing, to have a seat in the grandstand and watch the remarkable effects of such counterirritation on the victim of the rigid perineum.

These very "practical" medical publications which give the doctor so much more for his money than he can extract from reputable journals are always interesting, even if they tend to make one ashamed of his profession. Indeed, they vie with Medical Pickwick as a source of humor. And the fact that they keep coming, month after month, year after year, no matter how long you neglect to send your dollar, puts them above reproach. They are not out after subscribers alone. They must have some other goal in view.

But b. t. a. i. m., aren't they practical?

WILLIAM BRADY, M.D., Elmira, N. Y.

Nitrous Oxid Versus Ether

To the Editor:—It is often necessary to make allowance for the enthusiasm (often exaggeration) of nitrous oxid anesthetists. While the description of the manufacture of "gas" is interesting, the claims made by Dr. A. R. Warner in THE JOURNAL, Dec. 4, 1915, are decidedly overdrawn.

It is true that gas will *usually* anesthetize a patient more quickly than ether; but once in six or ten times the addition or substitution of the latter is necessary.

The "familiar scenes of delirium with orderlies holding the struggling patient," etc., are decidedly unfamiliar in Akron and other cities of the United States and Canada in

which I have witnessed and administered anesthetics. If they be common occurrences in Cleveland, the Lakeside Hospital is in sore need of competent anesthetists. In Akron we find one nurse sufficient while we administer the anesthetic. In my own practice, giving several anesthesias daily, only rarely have I required more than one nurse, and equally rarely does she do more than stand beside the patient. An orderly present is even more rare. The only preliminary hypodermic is morphin ⅙ grain, atropin 1/150 and often none at all. Only twice during the present year were several assistants required to hold the patient; in each case the patient was a hysterical woman who fought as soon as she entered the anesthetic room and before any anesthetic had been given.

During my practice I have witnessed only two cases of "vomiting in the halls" and one in the elevator. If it occurs frequently in Lakeside Hospital, I repeat, that institution requires competent anesthetists. My experience as described is the same as that of the other Akron anesthetists.

Any anesthetic has had and will always have its good and bad features. In endeavoring to create favor for gas and the opposite for ether, Dr. Warner has gone to extremes. We shall continue to use ether satisfactorily.

Finally, ether when properly given will not cause vomiting in from 70 to 80 per cent. of cases, a percentage in every way the equal of that of gas if the truth were admitted and not concealed.

A. S. McCormick, M.D., Akron, Ohio.

Classification of Pneumonia Cases

To the Editor:—In The Journal, Nov. 20, 1915, Dr. J. G. Cross gives an analysis of pneumonia cases, but does not mention where he received the scheme for classification. While senior intern at the Minneapolis City Hospital, Dr. Cross suggested to me that I work up an outline for division of cases in a sort of table form. With the aid of my junior, Dr. Sig. Engh, we worked up a table, and Dr. Cross made use of this and never even mentioned either Dr. Engh or myself.

Harry A. Salzman, M.D., Chicago.

[A proof of the preceding was sent to Dr. Cross, who replies:]

To the Editor:—I am glad to supply the omission to which Dr. Salzman has called attention. In preparing the analysis of cases of pneumonia, which appeared in The Journal, November 20, I received a great deal of help from my assistant, Dr. Stanley J. Seeger, and my secretary, Miss Hazel Packard, as well as from the interns at the Minneapolis City Hospital.

As to the table for classifying these cases, it can hardly be claimed that it is original with any of us, and I am sure Dr. Salzman would not wish to be so understood. During Dr. Salzman's service he kept records of twelve cases of lobar pneumonia, according to this table, which was the product of the ideas on the subject of the staff and interns on my service at that time.

I am very glad to acknowledge the part that Dr. Salzman and Dr. Engh had in this work.

J. G. Cross, M.D., Minneapolis.

Death Certificates by Unlicensed Healers

To the Editor:—In Queries and Minor Notes (The Journal, Dec. 4, 1915, p. 2026), in your answer to "J. W. R.," you say: "Christian Scientists are regarded as practicing medicine when treating for pay, and hence would be considered as physicians and as authorized to sign death certificates as such." You then quote the case of *Bandel* v. *Health Department*, 193 N. Y. 133; N. E. 1067. I have no doubt that you base this statement on Chapter 120 of the Acts of the General Assembly of Maryland of 1908, entitled "An Act to Repeal Section 101, Article 43 of the Code of Public General Laws title 'Health,' etc.," which defines specifically certain acts which will be considered, by law, practice of medicine. This act was drafted to prevent the practice of Christian Science, osteopathy, optometry or any other practice or cult which was not at that time properly regulated by legislation. If any person practiced a healing art and accepted a fee he was under the provisions of this act made a practitioner of medicine, which made it necessary for him to procure a proper certificate from the State Board of Medical Examiners, certifying to the fact that he had successfully passed the examination prescribed by that board or subjected him to the fines and penalties of the medical practice act for practicing without proper license.

So far as this law conveys authority to Christian Scientists to sign certificates of death, it also conveys equal authority to each and every other citizen in the state to sign certificates of death if he meets the requirements of the medical practitioner as prescribed by the other sections under the same title, that is, proper licensure and registration.

As a matter of fact, no certificate of death has ever been accepted in this state signed by a Christian Scientist. This act prohibits the recognition of the practice of Christian Scientists as such, and makes it an unlawful deed to practice Christian Science for pay.

We have in this state a law recognizing the practice of osteopathy, but only to a limited extent, and in that law there is a provision making osteopaths liable for the observance of all laws and regulations of the State Board of Health relating to infectious diseases and sanitation, and in this section there is another provision prohibiting the execution of a certificate of death by a practitioner of osteopathy. See Sections 130 and 301 of inclosed code of laws.

Frederic V. Beitler, Baltimore,
Chief, Bureau of Vital Statistics, Maryland Department of Health.

To the Editor:—In Queries and Minor Notes (The Journal, Dec. 4, 1915, p. 2026), among the answers, I find the following:

> For example, in Maryland, Christian Scientists are regarded as practicing medicine when treating for pay, and hence would be considered as physicians and as authorized to sign death certificates as such.

You are evidently in error in regard to the Maryland law in reference to Christian Scientists. In 1908 the definition of what constitutes the practice of medicine was made much broader with a special view to including Christian Scientists. This amendment was made at the instance of two active anti-Christian Scientists, one a druggist and one a newspaper man, each of whom happened to have wives of that faith, and each of whom had had distressing personal experience with Christian Science practice.

If you care to look up the definition of the practice of medicine in Maryland you will find it in Section 101, page 641, of the Fourth Edition of the A. M. A. Directory.

We have a good many Christian Scientists in Maryland and they do practice, but unlawfully, and no death certificate from one could be accepted.

Herbert Harlan, M.D., Baltimore.
President, Board of Medical Examiners of Maryland.

Pancreatin in Exophthalmic Goiter

To the Editor:—In connection with the recent demonstration of quite a uniform hyperglycemia in exophthalmic goiter, and the communication of Dr. O'Day (The Journal, Dec. 18, 1915, p. 2185), it is noteworthy that in two of my cases there was a complete cessation of exophthalmic symptoms with recession of goiter on rectal administration of pancreatin (dosage about 15 to 20 grains two or three times a day). This occurred in a series of cases of diabetes mellitus.

Max B. Leviton, M.D., Chicago.

Measles Not Inevitable.—It is entirely profitless and aside from the question to argue that children will have measles anyway, and that it is better for them to have it early in life and get it over with. This is a most pernicious doctrine, which could have been applied with equal force to any of the more serious contagious diseases, such as diphtheria or smallpox or typhoid, before we learned how to control them. Measles is at present a sufficiently important cause of death to warrant strenuous measures for its control.—Harold Farnsworth Gray, *Jour. Infect. Dis.*, November, 1915.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIPHTHERIA AMONG SCHOOLCHILDREN

To the Editor:—What is the most approved method of dealing with a diphtheritic in school? Is it necessary to close the school, or will an ordinary quarantine answer the purpose?

C. J. MARCH, M.D., Fordyce, Ark.
County Health Officer.

ANSWER.—There is no doubt that the school is often an important factor in the spread of diphtheria. This is frequently due to the occurrence among the schoolchildren of carriers of diphtheria bacilli. Closing the schools is now generally regarded as a less effective means of combating the spread of infection than the detection and isolation of the diphtheria carriers. In case of a diphtheria outbreak, the throat and nose of pupils, teachers and others in the school known to have been in contact with the infected children should be examined. The examination should consist in inspection for "sore throat," and also in taking cultures from the nose and throat. Those with a "sore throat" should be at once isolated and not be permitted to attend school until proved by bacteriologic examination to be free from diphtheria bacilli. Proved carriers, with or without sore throat, should be isolated until two successive negative tests are obtained. In a number of instances, measures of this character have been more effective in checking diphtheria outbreaks in schools than a closing of the schools and resort to the ordinary methods of fumigation (Ward and Henderson: *California State Jour. Med.*, August, 1897. Lind: *Am. Jour. Pub. Health*, 1913, iii, 976).

The Schick test has been found of great value in detecting susceptible persons in an epidemic of diphtheria. This consists in injecting superficially beneath the skin one-fifteenth dose of diphtheria toxin fatal for a guinea-pig. In a susceptible person a red spot develops at the site of injection in about forty-eight hours. If no reaction occurs, it is assumed that the person is immune to diphtheria. Under some conditions a prophylactic dose of 1:1,000 diphtheria antitoxin units should be given to exposed persons, although this is generally found more applicable in institutions than in public schools. It is not yet clear what are the best methods for freeing diphtheria carriers from virulent bacilli. Spraying with antiseptics has not always given satisfactory results. Special attention to the hygiene and cleansing of the mucous membranes of the throat and nose, accompanied by frequent washing with large volumes of physiologic salt solution, is likely to be of service. It may be emphasized, finally, that the most important single step to be taken in checking the spread of diphtheria in all schools and institutions is the detection and isolation of carriers. Arbitrary quarantine of those exposed and of convalescents, without bacteriologic examination, is not likely to be successful.

STUART'S CALCIUM WAFERS

To the Editor:—Can you tell me the composition of a proprietary remedy known as Stuart's Caicium Wafers? I believe they are manufactured at Battle Creek. I am particularly interested to know whether there is any arsenic in this remedy.

C., Ann Arbor, Mich.

ANSWER.—Stuart's Calcium Wafers are made by the F. A. Stuart Company, Marshall, Mich. The label of a specimen recently purchased on the open market reads: "Stuart's Calcium Wafer Compound—For Constipation, Blood Disorders, Skin Affections, any Derangement of Blood, Bowels, Kidneys or Liver."

The specimen was examined in the Association's Laboratory and the chemist reports:

> "Stuart's Calcium Wafer Compound consists of small brown coated tablets weighing on the average 0.0813 gm. (about 1¼ grains). The interior of the tablet is composed of an olive-colored material, which when moistened emits hydrogen sulphid. The material has a very bitter and unpleasant taste resembling aloes or aloin. Qualitative examination indicates that the 'wafers' consist essentially of calcium sulphid and aloes or aloin. No arsenic could be detected."

Like other so-called "blood purifiers," Stuart's Calcium Wafers evidently are essentially cathartic.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Sacramento, Jan. 11. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 11. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

ILLINOIS: Chicago, Jan. 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

INDIANA: Indianapolis, Jan. 11. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

IOWA: Des Moines, Feb. 8-10. Sec., Dr. G. H. Sumner, State House, Des Moines.

KANSAS: Topeka, Feb. 8. Sec., Dr. H. A. Dykes, Lebanon.

MINNESOTA: Minneapolis, Jan. 4-7. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

NEW MEXICO: Santa Fé, Jan. 10. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Examinations Division, Mr. Harlan H. Horner, State Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 11-12. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 18-20. Sec., Mr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 3. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VERMONT: Montpelier, Feb. 8-11. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Spokane, Jan. 4. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Maryland June Report

Dr. J. McP. Scott, secretary of the State Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 21, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 97, of whom 78 passed and 19 failed. Fifteen candidates were licensed through reciprocity. Two candidates were granted reregistration licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1911) 75; (1915)	86
Howard University	(1913)	75
Chicago College of Medicine and Surgery.....	(1915)	83
Rush Medical College.....	(1905)	89
College of Physicians and Surgeons, Baltimore....	(1913) 76; (1914) 76; (1915) 75, 77, 83, 84, 91.	
Johns Hopkins University.....	(1906) 87; (1909) 92; (1912) 82; (1913) 86, 86; (1914) 75, 77; (1915) 75, 75, 77, 78, 78, 78, 79, 80, 80, 80, 80, 81, 84, 84, 84, 85, 87, 87, 87, 88, 89, 89, 89, 89, 89, 91.	
University of Maryland.....	(1912) 85; (1914) 79; (1915) 75, 76, 76, 77, 79, 79, 80, 80, 80, 81, 82, 82, 82, 83, 83, 83, 84, 84, 85, 85, 85, 86, 86, 86, 88, 88, 90, 91.	
University of Virginia.....	(1913)	75
Jefferson Medical College.....	(1915)	79
Temple University	(1915)	82

FAILED

Howard University	(1914) *, 69, 73
Bennett Medical College.....	(1914) *
University of Louisville.....	(1912) *
College of Phys. and Surgs., Baltimore..	(1913) 73; (1914) †, *, 69
Maryland Medical College.....	(1910) *; (1912) 64, *; (1913) *, *
University of Maryland.....	(1914) *; (1915) 72
Harvard University	(1915) 71
Medical College of Virginia.....	(1912) 55; (1914) *

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Bennett Medical College.....	(1914)	Illinois
University of Louisville.....	(1911)	Tennessee
Baltimore Medical College..	(1898) West Virginia; (1909) Arkansas; (1913) West Virginia.	
Johns Hopkins University.....	(1912) Virginia; (1913)	Missouri
Maryland Medical College.....	(1904) Maine; (1911) W. Virginia; (1912) Maine.	
University of Oklahoma.....	(1913)	Oklahoma
Jefferson Medical College.....	(1896)	W. Virginia

Medico-Chirurgical College of Philadelphia	(1914)	Delaware
Memphis Hospital Medical College	(1906)	Tennessee
University College of Medicine, Richmond	(1901)	W. Virginia

* No grade given.
† Examination incomplete.

Virginia June Report

Dr. J. N. Barney, secretary of the Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 22-25, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 91, of whom 82 passed, including 3 osteopaths, and 9 failed, including 2 osteopaths. Seventeen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University	(1914)	79, 81
Kentucky School of Medicine	(1907)	77
University of Louisville	(1915)	75
Johns Hopkins University	(1914) 88; (1915)	88
College of Physicians and Surgeons, Baltimore	(1915)	82
University of Maryland	(1915)	81
Columbia University, College of Phys. and Surgs.	(1915)	86
New York Homeo. Med. Coll. and Flower Hosp.	(1915)	87
Jefferson Medical College	(1914) 78; (1915)	85
Meharry Medical College	(1914)	75
Medical College of Virginia	(1914) 75, 76, 79; (1915)	75, 75, 75, 75, 75, 75, 75, 75, 76, 76, 76, 76, 76, 76, 77, 77, 77, 78, 78, 78, 79, 79, 79, 80, 80, 80, 81, 81, 81, 81, 82, 82, 83, 83, 84, 84, 85, 85, 86, 86, 87, 87, 88, 88, 89, 92, 93.
University College of Medicine, Richmond	(1903)	75
University of Virginia	(1877) 83; (1915)	79, 81, 81, 84, 84, 84, 85, 86, 86, 87, 88.

FAILED

Howard University	(1914)	71
North Carolina Medical College	(1915)	62
Meharry Medical College	(1915)	64
Vanderbilt University	(1915)	*
Medical College of Virginia	(1915)	67, 70, 72

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University	(1914)	Dist. Columbia
Atlanta Medical College	(1914)	Georgia
Chicago Homeopathic Medical College	(1899)	Oklahoma
Hahnemann Med. Coll. and Hosp., Chicago	(1911)	Oklahoma
Hospital College of Medicine, Louisville	(1906)	W. Virginia
University of Louisville	(1912)	Kentucky
Baltimore Medical College	(1913)	W. Virginia
College of Phys. and Surgs., Baltimore	(1910) (1912)	Maryland
University of Maryland	(1904)	Florida
Harvard University	(1888)	Mass.
North Carolina Medical College	(1913)	N. Carolina
University of Pennsylvania	(1902)	Penna.
Chattanooga Medical College	(1905) (1908)	Tennessee
Meharry Medical College	(1912)	Tennessee
Medical College of Virginia	(1896)	Kentucky

* Withdrew.

Colorado October Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, Oct. 5, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 8, of whom 5 passed, including 1 nongraduate and 1 osteopath, and 3 failed. Sixteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1914)	83.3
Columbia Univ., Coll. of Phys. and Surgs.	(1915)	87.4
Vanderbilt University	(1915)	84.4
Nongraduate		79.6

FAILED

Keokuk Medical College, Coll. of Phys. and Surgs.	(1905)	*
University of Pittsburgh	(1912)	*
University of Nashville	(1882)	*

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University	(1905)	Dist. Colum.
Chicago College of Med. and Surg.	(1909) (1910)	Illinois
Hahnemann Medical Coll. and Hosp., Chicago	(1903)	Iowa
Rush Medical College	(1901) Ohio; (1902) Kansas; (1911)	Minnesota
Tulane University of Louisiana	(1903)	Texas
Boston University	(1889)	Connecticut
Univ. of Michigan Medical School	(1890)	Michigan
Marion-Sims-Beaumont Medical College	(1903)	Missouri
Univ. and Bellevue Hosp. Medical College	(1912)	New York
Cincinnati College of Med. and Surg.	(1902)	Ohio
Meharry Medical College	(1908)	Florida
University of Nashville	(1904)	Arkansas
University of Texas	(1911)	Texas

* No grade given.

Book Notices

MICROBES AND MEN. By Robert T. Morris, M.D. To-Morrow's Topics Series. Cloth. Price, $2 net. Pp. 539. Garden City, N. Y.: Doubleday Page & Co., 1915.

This is the first of a series of three books by the same author entitled "Tomorrow's Topics." The original draft of notes was intended for physicians, but subsequent elaboration of points "followed a line of least resistance into the field of lay interest." The author believes that "Microbes and Men" may "appeal particularly to the readers who are fond of ultrascience." This may be true, for the minds of the great majority of laymen are not trained to scientific thought; but to one accustomed to weighing evidence it could only appeal in the sense that the absurd may momentarily interest one by way of contrast. That many of the views expressed are ultrascientific will be readily admitted, with the accent on "ultra." The dominant thought is that all the mental and physical activities of man are dependent on the microbe. "The description of all mental and physical activities of man as being dependent upon the microbe rests upon a basis of fact which is known to a few men." If the fact is known to a few men, these favored few have been very careful to keep the facts to themselves. If the author is one of the few, he too has kept the facts to himself; at least he has not divulged them in "Microbes and Men." The author evidently believes, as he says, "that one may sometimes get a right conclusion out of faulty premises if his logic is bad enough," and no one will question that his premises are faulty and his logic bad; but a "right" conclusion based on faulty premises is far from being evidence of truth. Definitions frequently are so loosely drawn that they give the author, as he says, "as large a charter as the wind." What could give one greater latitude when dealing with chemistry than to define it as "everything that is going on"? It certainly would allow one's fancy to roam as free as the wind. Further analysis of the logic, or rather lack of logic, is unnecessary, for the author does not ask any one to agree with him, and admits that "it has been necessary to allow highly speculative theories, accepted facts and tenable hypotheses to run along side by side in mixed company. Each reader, then, may exercise his own judgment in selecting what appeals to him out of his personal experience." This generosity on the part of the author would indicate that he does not expect to carry conviction to any one, and in this respect he probably will not be disappointed. The book cannot be looked on as a scientific production, but rather as the disconnected thoughts of a busy surgeon who feels that he has messages to deliver to the world. The messages as defined in the preface are good, but they are so smothered in the text that they run great chances of being missed entirely.

THE CLINICAL ANATOMY OF THE GASTRO-INTESTINAL TRACT. By T. Wingate Todd, M.B., Ch.B., F.R.C.S., Henry Willson Payne Professor of Anatomy in the Western Reserve University, Cleveland. Cloth. Price, $1.75 net. Pp. 264, with 32 illustrations. New York: Longmans, Green & Co., 1915.

This volume, as the author says, "embodies the substance of the course of lectures on the alimentary canal as given in the anatomical laboratory of Western Reserve University"; but it deals with much more than the clinical anatomy. The author discusses the physiology of the alimentary tract, as well as many operations and the effect of these operations on the physiology of the organs involved. One can get deadhouse anatomy from the dissecting room and the textbook; but what is wanted is not deadhouse anatomy but living anatomy; living anatomy is inseparable from physiology or function. This little work teaches living anatomy as well as it is possible to do away from the operating table. A surgical operation is something more than a mechanical procedure on an inanimate object; it is a mechanical procedure on living active tissues, and a reading of this book will do much to disabuse one's mind of the idea that anatomy is inanimate. The too frequent alternating use of the term

"gullet" and "esophagus" for the same structure is confusing at times. For instance, we find: "The gullet has no tactile sensibility. Carminatives, hydrochloric, lactic and acetic acids produce no sensation in it. The esophagus is sensitive to thermal stimulation; alcohol produces a burning sensation in the gullet," etc. These small criticisms, however, detract little from the merit of the work as a whole.

TEXT-BOOK OF NERVOUS DISEASES, FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. By Charles L. Dana, A.M., M.D., LL.D., Professor of Nervous Diseases in Cornell University Medical College. Eighth Edition. Cloth. Price, $4.25 net. Pp. 632, with 262 illustrations. New York: William Wood & Co., 1915.

The existence of this book for twenty-three years has established it as a standard teaching book on nervous diseases. As the author says, the production of general and special textbooks on the anatomy of the nervous system since the first edition, as well as the newer developments in neurology, has permitted and required some change in the plan of the book. From this edition much of the anatomy has been left out, only revised descriptions useful in diagnosis and for reference being retained; in the revision of the remainder of the work there have been added new chapters on poliomyelitis and on tumors of the spinal cord and brain, and the newer information of syphilis of the nervous system—paresis, tabes, etc., and the serology of nervous diseases, in which the author acknowledges the assistance of several collaborators. Methods of diagnosis and examination and description of symptoms have been revised, and a list of the growing collection of eponymic signs and syndromes has been provided. Therapeutics, particularly drug therapeutics, has been practically left out of the book, and many physical methods of treatment have been merely mentioned, the physician or student being left to obtain the details of such methods from the numerous available books devoted to them. Many new illustrations have been added. The book is so well and favorably known that it needs no recommendation.

TEXT-BOOK OF FORENSIC MEDICINE AND TOXICOLOGY. By R. J. M. Buchanan, M.D., F.R.C.P., Professor in Forensic Medicine and Toxicology, University of Liverpool. Eighth Edition. Cloth. Price, $3.25 net. Pp. 417, with 46 illustrations. New York: William Wood & Co., 1915.

The present edition of this work is a continuation of the volume formerly issued under the title of Husband's "Forensic Medicine." It has been thoroughly revised, many alterations and additions appearing throughout. While it is not so comprehensive as many similar works, it covers the ground in a sufficiently extensive manner for the student and younger practitioner, for whom it is primarily intended. The book is divided into two sections, the first of which contains sixteen chapters on forensic medicine, and the second section fifteen chapters on the general and special methods of toxicology. The numerous tables outlining differential tests and symptomatology are especially worthy of mention, and the photomicrographs are excellent. The book is clearly and concisely written, and should prove valuable to students and practitioners in enabling them to obtain a general idea of this important subject.

A TEXT-BOOK OF CHEMISTRY AND CHEMICAL URANALYSIS FOR NURSES. By Harold L. Amoss, S.B., S.M., M.D. Cloth. Price, $1.50 net. Pp. 268. Philadelphia: Lea and Febiger, 1915.

The author believes that chemistry is not given the attention in graduate and undergraduate instruction of nurses that its importance merits, and that the more chemistry a nurse knows the greater her value to the patient and to the physician. Along some lines, dietetics, for example, this may be true; but the majority of physicians send specimens for analysis to a properly equipped laboratory for examination; a nurse seldom if ever possesses the necessary equipment, and hospital laboratories are generally in charge of properly qualified men. This particular book, however, is clear and concise, and seems well adapted for use as a textbook for nurses.

Medicolegal

Common Law Basis for Ordering Physical Examinations—Some Rules for Them

(Williams vs. Chattanooga Iron Works (Tenn.), 176 S. W. R. 1051)

The Supreme Court of Tennessee affirms a judgment holding that a trial court has the right to compel the physical examination of a plaintiff suing for personal injuries. The court says that the power is affirmed in the following jurisdictions: Alabama, Arkansas, California, Colorado, Georgia, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Nevada, Ohio, Oklahoma, North Dakota, Washington and Wisconsin. It is authorized by statute in New York, New Jersey and Florida. It is denied in Illinois, Montana, South Carolina, Utah, Texas and in the Supreme Court of the United States. One of the chief questions discussed in the cases is the basis of the right to make the examination. In some it is insisted that it is a right inherent in the courts for the purpose of effecting justice, and in those which object to the right it is insisted that no such power inheres in courts, and that it can be conferred only by statute. It is denied in the negative cases that such practice is recognized in the common law. But the Supreme Court of Tennessee believes the right was exercised at common law, although not in precisely the same way in which it is practiced at this time. At common law there was an old action known as an appeal of mayhem, which was for any hurt done to a man's person, whereby he was rendered less able in fighting to annoy others, or defend himself. The demand was set forth in a declaration, describing the offense with the greatest certainty, also showing in what part of the body the wound was given, and certain excerpts from early authorities seem to indicate an ancient practice of having a personal examination of an injured plaintiff, generally by the court, sometimes by the court and jury, generally without the aid of medical men, but sometimes with their aid. This court here finds what seems to it the germ of the present practice. It has been developed and extended in modern times like other principles to meet the needs of the business transacted in modern courts.

In the cases cited which recognize the doctrine, it is applied with great restraint, and with a careful attention to the rights of the plaintiff. He must first be asked to submit to an examination, and the court can be applied to only after his failure to consent. The application to the court must be made before the trial, and so as not to create unnecessary delay. The examination cannot be ordered on mere motion. The application should be supported by affidavit setting forth pertinent facts and reasons. The examination cannot be had merely to obtain cumulative evidence. It must be made to appear that it is necessary in order that justice may be done to the defendant. It should affirmatively appear that the examination can be made without danger to the plaintiff, or any serious pain. Proper inquiries on these heads should be made by the trial judge before ordering the examination, and his conclusions should be written down in the order. Being thus prepared for the proper exercise of his discretion, he may act, and either grant or disallow the application.

If the application be granted, the physician or surgeon must be selected by the trial judge, and he must be one of competent skill, and indifferent between the parties. In the conduct of the examination, the privacy of the plaintiff's person must be preserved as far as possible. In the case of a woman, there should be female physicians, if they are accessible. If application be made therefor, the plaintiff's own physician should be permitted to be present at the examination. And while the expense must be borne in the first instance by the defendant making the application, the fee should be fixed in advance, and paid into court, to be paid to the expert when he files his report. The expert should file a report, stating in detail the result of his examination, but not for use as evidence, except in the crossexamination of the expert, if made a witness.

Liability for Death Attributed to Negligence in Loss Internally of Drainage Tube

(Sontag vs. Ude (Mo.), 177 S. W. R. 659)

The St. Louis (Mo.) Court of Appeals affirms a judgment for $3,500 damages in favor of the plaintiff for the death of his son, about 13 months of age, attributed to the alleged negligence of the defendant physician in losing internally and failing promptly to recover a drainage tube. The original verdict was for $5,000, from which to prevent a new trial being awarded, the plaintiff remitted $1,500. His petition stated that the defendant was called about February 14 to treat the child for bronchial pneumonia. In the course of the treatment the defendant made an incision in the region of the fourth and fifth ribs, under and a little behind the left arm, April 13 opening this incision and inserting a tube about 5 inches long for the purpose of drainage, on which latter date the tube was lost. The child thereafter grew worse, but the defendant failed to discover that the tube was in the child's body until April 30, when the defendant removed the tube by an operation performed therefor, after which the child died, May 7. The plaintiff charged that the death of the child was directly caused by the negligence and unskilfulness of the defendant in so placing the tube in the incision in the body of the child that it could and did slip inside his body, and in failing to locate and remove the tube within a reasonable time. From the evidence it appeared that the incision for drainage was first made March 6, and that the defendant "anchored" the tube by sticking a safety pin into it and through the skin of the child, but, the plaintiff protesting against this, the pinning to the skin was discontinued. It appeared also that when the defendant discovered the loss of the tube, April 13, he told the plaintiff that it had dropped into the baby and that they would have to operate right away to get the tube out, but the plaintiff doubted this, and they searched all over the premises in an effort to find the tube; that the plaintiff insisted on having the child examined under Roentgen rays, but that the defendant said that rubber would not show, or the tube might be lying back of a rib, and would not show. April 16, with the assistance of the same two surgeons who had assisted in the first operation, the defendant removed part of a rib, but did not find the tube. The plaintiff insisting on the use of the Roentgen rays, that was finally done, the tube being thereby located and removed April 29. Moreover, it was in evidence that while the child had apparently completely recovered from the effect of the first operation, he began to fail after April 13, when the tube fell in, and gradusually grew worse, becoming mere skin and bones; took no nourishment; had a high fever, and, as the father testified, "lay like a stone," until he died. The defendant introduced no testimony. But, with the testimony given by the plaintiff and the nurse before them, although unaided by professional expert evidence, the court thinks that the jury, as intelligent men, were competent to say whether the conduct of the defendant was proper. The negligence charged was the insertion of a rubber tube in the wound and leaving it there unsecured, so that it slipped inside the body; that was the primary negligence charged; then followed the charge that this tube was allowed to remain in the cavity so long that death resulted when it was finally removed. Whether these were acts of negligence, was for the jury. Whether these acts were the proximate cause of the death was within the competency and intelligence of the jury to determine. No professional—no opinion—evidence was necessary, so far as the plaintiff's case was concerned. If these matters were not the cause, if the defendant's conduct was that of a reasonably skilful surgeon and physician, it was for him to have put in his proof. The facts in evidence, if believed by the jury, were of sufficient probative force to warrant the jury in holding the defendant liable for the negligence charged, if those facts were undisputed.

Emotion and Life.—A life without emotion would be a dead calm, a vegetative, worthless existence.—*Monthly Health Letter.*

Miscellany

The Massachusetts Dispensary Law

Massachusetts has a law requiring each city and town having a population of 10,000 or over to maintain a free dispensary for the discovery, treatment and supervision of needy persons resident within its limits and afflicted with tuberculosis. The law is mandatory, and following a notice served on all cities and towns with the population named by the state commissioner of health early in the present year, such dispensaries have been established. This has been a considerable undertaking in towns of small population. In some of the smaller cities and towns the need of a full-time, skilled tuberculosis worker is apparent, but in others the need has not been so evident. The discussion of the dispensary problem in the *Public Health Bulletin* of the Massachusetts State Department of Health says that to meet the situation it has been the policy of the department, when the cooperation of the local authorities could be secured, to encourage a broadening of the functions of the dispensary so that they would include all functions that could be considered those of a public health social service center, and it is believed that such will be the logical evolution of most of the tuberculosis dispensaries of the smaller cities and towns. Combining the services of school nurse, factory nurse, board of health nurse and baby hygiene or district nurse in one person will, it is believed, be a satisfactory solution of the problem. The weakness of this plan is the danger of underestimating the local needs in many of these lines of public health service, resulting in inadequate or superficial work and in the overloading of a single worker. As to the results of the state-wide tuberculosis dispensary policy, it is, perhaps, too early to make an estimate. The following figures, however, are given in the *Bulletin:* The tuberculosis dispensaries report a total of 2,778 individuals who have had first examinations since July 1. Of these, 27 per cent. were made by dispensaries which were not in existence before July; 32 per cent. are reported from Boston, and 68 per cent. by the other dispensaries of the state. The actual examinations are believed, however, to be only a rough index of the activity and value of the dispensaries. The work so far is really preliminary, and nurses and all others connected with the dispensary work are making a study of the tuberculosis situation in the various communities. They have hardly begun to get patients into the dispensary for examination, to say nothing of contacts. In future, scores of cases will be brought into touch with dispensary service. A large percentage of the patients already examined have been found to be advanced. It is emphasized that the nurse should not confine her field work to dispensaries alone, but in every city and town she should cooperate with practicing physicians.

Dust and Tuberculosis

In an article on tuberculosis in *Public Health Reports*, Oct. 29, 1915, Dr. George M. Kober considers the influence of dust on the prevalence of disease, particularly tuberculosis. The tuberculosis rate among 472,000 males in the United States exposed in fifteen occupations to the inhalation of organic dust was 2.29 per thousand, against a rate of 1.55 for all occupied males; 42.05 per cent. of the deaths of printers, lithographers, and pressmen, who died at ages between 25 and 44, were from tuberculosis, as compared with 21.88 per cent. for farmers, planters and overseers.

In Berlin, as shown by Sommerfeld, the average tuberculosis death rate was 4.93 per thousand of the population. In nondusty trades it was 2.39, and in dusty trades 5.42.

In Vermont in towns where granite and marble cutting is carried on, in a population of 34,899 the tuberculosis rate was 2.2 per thousand, against a rate of 1.3 for the entire state.

Kober says it is estimated that industrial workers, constituting about one third of the population, contribute about one half of all the deaths from tuberculosis. By factory sanitation and effective methods for the prevention and removal of

dust, fully one half of these lives could be saved. That this is not speculative is indicated by the figures from Solingen, Germany, where the population is made up largely of employees in the cutlery industry. The mortality had been reduced from 20.63 per thousand in 1885 to 9.3 per thousand in 1910, and the tuberculosis rate from 5.4 in 1885 to 1.8 in 1910 per thousand population. In the German cement works also diseases of the respiratory organs have been reduced from 9.3 to 3.3 per cent. after the installation of dust-preventing apparatus.

Society Proceedings

AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY

Sixth Annual Meeting, held in Philadelphia, Nov. 10-12, 1915

DR. CHARLES A. FIFE, Philadelphia, in the Chair

RESPIRATORY DISEASES

Statistical Study of Respiratory Diseases as a Factor in the Causation of Infant Mortality

DR. WILLIAM C. WOODWARD, Washington, D. C.: The importance of the part played by diseases of the respiratory system in causing deaths during the first year of life has been to a considerable extent overlooked. In the registration area of the United States in 1913, diseases of the respiratory system caused 15.85 per cent. of the total mortality in the first year of life, approximately one quarter of the total mortality from these diseases at all age periods taken together. A campaign against diseases of the respiratory system in infancy will form an important factor in any campaign that may be inaugurated against such diseases generally. Bronchitis and pneumonia caused 95 per cent. of all deaths in the first year of life due to diseases of the respiratory system. Deaths from diseases of the respiratory system apparently occur to a greater extent during the third week of life than during any other weekly period, while the heaviest month's toll was levied in the first month of life, with a percentage of 18.62.

Prevention of Respiratory Diseases

DR. ROYAL STORRS HAYNES, New York: In the prevention of respiratory diseases, two important factors are destruction or exclusion of the infecting organism, and preservation of the resistance. Transference by contact is the method of infection in most instances, and this may be avoided by real cleanliness. In connection with the second factor, the preservation of a perfectly functionating vasomotor system is of the greatest importance. I suggest the appointment of a committee on the prevention of respiratory diseases, whose duties should be: (*a*) to supervise the conduct of an intensive investigation of respiratory affections in a selected area in a selected city; (*b*) to arrange for the publication of articles in the medical and lay press dealing with the importance of these affections, acquainting the laity with the loss of time, money, health and life which the diseases cause; (*c*) to investigate the health laws of the various states with the view of determining the present legislation on these subjects and where desirable to improve it; (*d*) to inaugurate an educational campaign by lectures for those which the printed articles will not reach, and (*e*) to stimulate the care of the child before entering the school age by laying greater emphasis on his medical supervision between the milk station and school age.

Treatment of Respiratory Diseases: Value of Fresh Air

DR. JOHN LOVETT MORSE, Boston: Great confusion prevails as to the use of the term "fresh air." It may be defined as air which is in motion, dry and cool. It is not necessarily outdoor air. Fresh air and cold air are not identical. In certain diseases of the respiratory tract, cold air acts as an irritant to the respiratory mucous membrane. Cold air is a stimulant to the vasomotor system. It has been thought to be of advantage in pneumonia on this account. Recent investigations show that blood pressure is not lowered in pneumonia and that the vasomotor system is not impaired. Fresh air is of advantage in all diseases of the respiratory tract. Cold air does harm in acute stages of nasopharyngitis, laryngitis and bronchitis. It may or may not be of advantage in the later stages of these conditions and in bronchopneumonia. It is questionable whether in pneumonia it lowers mortality. As it is not possible to treat all diseases of the respiratory tract in the same way, cold air must be used with discrimination.

Discussion on Respiratory Diseases

DR. L. EMMETT HOLT, New York: We cannot too strongly emphasize the importance of quarantine of the infant when other members of the family have colds. This particularly obtains in connection with premature infants. Against the contagiousness of pneumonia our efforts must be directed largely to raising the resistance of the infant. There have been almost as many deaths caused by cold air as there have been cures effected. Cold air is a means of treatment to be used with great discrimination. I have seen a great amount of harm done by the treatment of acute respiratory diseases, especially in young infants, by exposure to cold air.

DR. S. M. HAMILL, Philadelphia: I want to caution you in regard to the use of vaccines in the prevention of colds. The whole question of vaccine therapy is so undecided at the present time, and the dangers connected with the use of vaccines so manifest, that the subject should never be presented to an audience, especially one composed largely of laymen, without a word of caution against their promiscuous use. Also, the promiscuous use of any form of nasal douche is apt to do more harm than good. I am in entire sympathy with Dr. Morse in believing that fresh air has been incautiously employed. Dr. Morse defines fresh air as cool, dry and moving air. I believe that the proper way to obtain this is through the open windows and not by a ventilating system. This is especially true in the homes of the poor, among whom diseases of the respiratory system are especially prevalent.

DR. J. P. CROZER GRIFFITH, Philadelphia: It never has been proved that the universal employment of cold air, or fresh air, or open air, for the treatment of pneumonia or other respiratory diseases is the correct measure. The excessive use of cold air for the treatment of respiratory diseases has been a fad and has gone beyond the medical profession into the hands of nurses, hospital managers and the laity in general. If among medical men there is doubt concerning the cases in which this treatment may be used, certainly the measure is not safe in other hands. I am a believer in fresh air for many diseases of the respiratory system, but it must be used with the greatest judgment. I agree with Dr. Holt that we see patients who are made worse by its indiscriminate use. We see others who improve only by this treatment.

DR. CRESSY L. WILBUR, New York: The foundation of the work of the prevention of infant mortality is the registration of births and deaths. It is a shame to this country that the births of its infants are not registered. The only exception to this lack is the state of Pennsylvania, and I want to congratulate the people of this commonwealth and municipality on their influence in compelling legislation in this matter.

THE MIDWIFE

The Education, Licensing and Supervision of the Midwife

DR. J. CLIFTON EDGAR, New York: The midwife for traditional, social and economic reasons attends about 40 per cent. of confinements in this country and is at present a necessary evil. The solution of the question in the rural districts is in the inclusion of midwifery service in rural district nursing should a physician not be available. In illustration of this we have the proposed course of midwifery in the Washington University Hospital in St. Louis. The midwife should never be regarded as a practitioner. Her only legitimate functions are those of a nurse plus the attendance on a normal delivery when necessary. No unlicensed women should be permitted to practice, and even as a temporary

measure only properly qualified women should be granted a license. Even licensed midwives should be supervised by the local department of health as is done in Buffalo, Pittsburgh and Providence, the system following closely that in operation in England and New Zealand, where infant mortality is conspicuously low.

Is the Midwife a Necessity?

Dr. J. M. Baldy, Philadelphia: This country contains several groups of foreigners who have been accustomed to the midwife, and until immigration ceases and these peoples are evolved into Americans, the midwife will be demanded. The question resolves itself into the proper education and control of the midwife. Results are obtained by meeting existing conditions and improving them. There is no state, city or town in the United States in which by the passage of laws it has been possible to eliminate the midwife. Any measurable degree of success has come only through education and control.

Progress Toward Ideal Obstetrics

Dr. Joseph B. De Lee, Chicago: I am opposed to any movement to perpetuate the midwife. She is a relic of barbarism, and her perpetuation demands a compromise between right and wrong. She is a drag on the progress of the science and art of obstetrics, her existence stunting the one and degrading the other. The foreigner is becoming enlightened on the value of medical attendance and demanding it. The visiting nurse does an amount of maternity and prenatal work not fully recognized. There are thousands of young physicians who would take cases now cared for by midwives were it not considered undignified work, and also undignified to accept such a small fee for the service. In educating the midwife we assume the responsibility for her, we lower standards and compromise with wrong, and I for one, refuse to be *particeps criminis*.

Discussion on the Midwife

Dr. William R. Nicholson, Philadelphia: Without inspection of every case we cannot control the midwife. We have in Philadelphia five inspectors, graduates in medicine, who inspect every case after delivery has taken place. It seems to me that an association of this sort could do an immense amount of good if its members worked on a common ground. To me the question at issue is the benefit of the women now attended by the midwife. We do not believe that the midwife can be eliminated at present, and all we are doing is carrying out a *police* supervision—there is no other word for it. The women are brought to account for any infraction of requirements. We have saved the lives of babies and mothers, and improved obstetrics by our work, which may be regarded as a temporary expedient. I believe that if we had a certain number of English speaking, intelligent young women trained to care for women in labor, we would be able to get rid of a number of the midwives. We have nine such young women who have been in training from six to eight months. They attend lectures given by one of the inspectors, and must see and deliver twenty patients under inspection. This is an experiment which Dr. Baldy has given us permission to try out, and we believe that the result in a year or two will be good.

Dr. J. Whitridge Williams, Baltimore: When you come to face the inspection of midwives in the big cities, unless there is a competent man at the head of the work the effort is going to be a miserable failure. One of the greatest advantages in modern obstetrics is the development of prenatal care. Further development of obstetrics lies in supervision of the woman after confinement, but this prenatal and postnatal service involves the work of the obstetrician, the pediatrist and the social service worker. The crux of the matter is the proper education of doctors to be competent obstetricians. We have just begun to understand in this country what the obstetrician is. It is much more than a "man midwife." The man who invented the obstetric forceps was named Chamberlen. He called himself Hugh Chamberlen, "man midwife." "Man midwife" and "accoucheur" are two terms that rouse my ire. The "man midwife" has disappeared and the "accoucheur" is disappearing; what we want is the scientific obstetrician. We can get him only by the development of medical education. We need a large, thoroughly equipped woman's hospital where everything pertaining to women and childbearing is studied from the point of view of teaching that which we now know and for the acquisition of new knowledge. Such a hospital has been endowed in Pittsburgh and this should set the pace for other cities.

Dr. S. Josephine Baker, New York: My interest in the midwife is solely to make her as nearly as we can a fit person to give the mothers and babies their essential care; but it is an absolute impossibility to abolish her in the city at the present time. In New York, the mortality and morbidity of mothers and babies attended by midwives is in most instances, in proportion, less than that among those attended by physicians. We are coming to the better education of the medical student, but in the interim we are doing, just so far as we are able, that which seems the most efficacious and most nearly protects the mother and baby. The midwife is being eliminated. We have in New York only half as many as there were seven years ago. It is probable that this elimination will come about by making the standard so high that none of the ignorant and untrained women can reach it. At present the women will practice whether you want them, whether licensed or not, and it is infinitely better to see that the care given by the midwives is at least adequate. In prenatal work my experience is that the midwife is one of our best cooperators in referring the mother to us for instruction; and, contrary to what has been said, the women do engage the midwife quite as early as women engage the doctor. We are having meetings with the midwives for purposes of instruction, and they are beginning to look on the health department, not as something to be feared, but as something which is a very definite help to them. Through such cooperation we believe we shall obtain reforms more effective than those obtained by radical measures.

Dr. Arthur B. Emmons, Boston: Nothing is being done in Massachusetts to eliminate the midwife. Our law registers physicians, and if a midwife wants to qualify before the board of licensure she must pass the examination. It is interesting to note that the daughter of one midwife has already taken a course in medicine and qualified as a physician. I believe that the plan which we have in Boston is an answer to the question of eliminating the midwife. We have been working out a plan of holding prenatal clinics and conferences. From among the graduates of the lying-in hospital we select a number of young physicians who attend these patients, receiving from $5 to $10, depending on the section in which the women live. The follow-up work is done by the visiting nurse, and I am satisfied with our results from a medical point of view. I have worked the idea out with graduates in medicine with the thought of its adoption in other parts of the country. Pennsylvania is leading this country in its requirements for medical licensure.

Dr. George W. Kosmak, New York: There is no stronger argument for the elimination of the midwife than the statement that she should be under supervision.

Dr. Williams, New York: There is no demand for obstetric hospitals or dispensaries in the rural districts; there is a demand for good midwives. I expect to see the midwife in the state of New York for some time, and I intend to see that some such supervision as that developed by Dr. Baldy is established.

Wages and Employment as Factors in Infant Mortality

Mr. Sherman C. Kingsley, Chicago: Districts which have the largest measure of poverty also have a higher mortality from all causes than have localities better circumstanced. It is difficult to assess baby deaths definitely against low income, but poverty involves housing, overcrowding, quality and amount of food, sunlight, air and wholesome leisure for mothers. With the baby, as with communities, life and health are purchasable. Figures show that babies of families living in one room have less than half the chance of those living in four; and the infant whose father receives less than

$10 a week has about half the chance of life as the one whose father earns twice this amount. Our life-saving advice to the mother must be accompanied by an industrial order which gives a living wage to the father.

Maternity Insurance

DR. LEE K. FRANKEL, New York: From the thirteenth century, provision, either in the home or in hospitals, was made under the auspices of philanthropic agencies for the care of indigent women in childbirth. Changed industrial conditions have necessitated legislation protecting women working prior and subsequent to maternity. In practically all European countries such legislation has been enacted under which women are forbidden to work for periods varying from two to six weeks before and after confinement, while in the United States in only four states has such legislation been established. These states are New York, Vermont, Massachusetts and Connecticut. The next logical step to this compulsory legislation was the development of a scheme of insurance for the lying-in period to replace the wages lost. Such schemes of insurance have been organized in nearly every European country. In Italy alone has the insurance plan developed as a distinct maternity insurance to which both employer and employee contribute. In other countries, insurance against maternity is a phase of general sickness insurance, the dues being paid by all members of the scheme. It has been estimated that under a sickness insurance scheme in which practically all of the working element of the population are members, it would be possible to give maternity benefits for a period of from four to six weeks, and in addition, medical care and medicine at a cost varying from 0.5 to 1.5 per cent. of the wages. I believe that if a scheme of maternity insurance were developed in the United States, it would be wiser to make it a general sickness insurance scheme rather than a specific maternity insurance.

To What Extent May the Mother Substitute Proprietary Preparations for the Advice of a Physician?

DR. CARL L. ALSBERG, Washington, D. C.: The mother in giving proprietary remedies is governed by false ideas of economy and convenience, and the truth should be presented to her by all possible means. The physician has a public and professional duty in the education of the public on this vital question. The dealer is concerned solely from the business standpoint. The solution lies in an educated public opinion.

Baby Saving Activities

DR. GAVIN S. FULTON, Louisville, Ky.: In our babies' milk station we have done away with the rule of giving free milk to everybody and give it only to those in great need. This change has made no difference in attendance, and the interest in the teaching side has not abated. We have five stations in which a weekly clinic is held with a doctor and nurse in attendance. We have had a death rate among the children seen in these clinics of 1.2 per cent.

DR. J. H. MASON KNOX, Baltimore: We have been able to enlarge our work during the past year by the addition of four new welfare stations. We have a supervising nurse in the central office where the matter of publicity is looked after. We have in connection with the Johns Hopkins clinic a nurse visitation service, and we are undertaking the visiting of all dispensary cases. We have access to the birth registrations of the city, and every week our nurse visits the homes of the new-born babies. In this way we shall be able to keep the latter under skilful advice for the first year of their existence.

DR. THOMAS B. COOLEY, Detroit: An interesting new departure which we made in Detroit was to establish a health center in a manufacturing village on the edge of our city. In the first quarter the mortality for the village as a whole was reduced from approximately 27 per cent. to 17, and in the district where intensive work was done, the mortality dropped from 25.8 per cent. to 12.6.

MISS CARR, Montreal: We have twenty-three French and five English stations, all supported by the city. We have people coming to them of almost every nationality in the world.

DR. JOSEPH S. WALL, Washington, D. C.: We have had an increased attendance at our welfare stations of from seventy-six in the first year to 1,749 in the present year. We established the prenatal work two and a half years ago, and the total number of mothers reached is 244. We have added to our nursing staff a prenatal nurse and a field nurse. Every one of our mothers has had the ability to feed the baby at the breast, and satisfactory results have been obtained by instituting the four hour nursing schedule when the mothers were working away from home. We have an eight hour law in our city, and this gives the baby one nursing if the mother can go home or have the baby taken to her. We have three and four conferences a week in our milk stations. We try to make the stations as attractive as possible, and look on them as mothers' clubs.

DR. HENRY F. HELMHOLZ, Chicago: I can report for Chicago an increase of from 5,400 to over 8,000 cared for at our milk stations. We have worked successfully in cooperation with the Illinois Home and Aid Society. A special nurse visits all the homes in which the aid society has placed its babies and sees that the foster mothers come to an infant welfare station once every two weeks.

DR. WILLIAM N. BRADLEY, Philadelphia: Among the newer activities of our baby welfare work is an investigation of the manner of control of homes for children under 3 years of age, and a plan has been worked out for their government. An effort has been made to have hospitals adopt certain regulations helpful to child welfare, in the matter of number and lengths of visits to children in the hospitals, the wearing of gowns by visitors entering the wards, and in the answering of inquiries by some one in intimate charge of the patient with the least possible delay. One other activity has been the establishment of a wetnursing bureau under the control of the new department of child hygiene which has come about largely through the efforts of the Babies' Welfare Association.

DR. J. HERBERT YOUNG, Boston: The work of our baby welfare association has grown from 738 babies under our care in 1909 to 4,679 for the year ending October, 1915. This means that approximately 25 per cent. of the entire infant population of Boston is now receiving milk and nursing at our twelve stations. Our medical staff has increased from fourteen to twenty-four physicians. Almost without exception these men are specialists in the care of infants and children. Although we are still unable to pay our physicians, these appointments are highly esteemed.

MISS MARY ARNOLD, New York: Our Babies' Welfare Association is a federation of all organizations affecting babies directly or indirectly. Our board of health sends a letter to all mothers losing their babies asking if they would like to nurse another. A nurse makes an inspection, and if the conditions are satisfactory the mother is sent another baby to nurse. The association acts as a clearing house in the federation. We have now fifteen hospitals which report their babies to us on discharge. The nurse in the milk station waits to see whether the mother brings her baby to us, and if she does not, visits the home so that in the first month of life the baby may receive the care it needs.

DR. COLLINS H. JOHNSTON, Grand Rapids, Mich.: Our death rate has not been above 10 per cent. in the last five or six years. We have two outdoor clinics and will have two more this fall.

DR. GEORGE W. GOLER, Rochester: We are trying to link up our baby welfare work with the schools, placing the emphasis chiefly on education. We also have a day nursery for the care of women obliged to work away from home, and in one school we have thirty-five children under 3 years of age. Our aim is prenatal and postnatal work, with the care of the child after it leaves the milk station. At five years when entering the school, the school physician will follow it up until it goes to work. This should be the real aim of welfare work.

MRS. MAX WEST, Washington, D. C.: The Federal Children's Bureau is preparing for a nation-wide baby week next

spring. We have prepared a circular of information which we are glad to furnish on application. The Children's Bureau is especially anxious to deal with the rural problem.

Infant Welfare Work; Its Purpose, Opportunities and Agencies

Mr. Homer Folks, New York: Infant welfare work is preventive rather than remedial. In a very few years the infant welfare movement has changed from the dealing with the few for curative purposes to dealing with the multitude for preventive purposes. From every point of view, infant welfare must be regarded as raising the level at which the struggle for existence occurs, and not simply a concession to humanitarian instincts. From the point of view of the largeness of opportunity, we find great encouragement from the history of recent years that infantile illness and mortality are preventable with relatively little effort and expense. Compared with other large public health movements, the reduction of infant mortality is simplicity itself. The New York State Health Department states that there are about 300,000 deaths per annum in the United States among infants under 1 year of age, and that 150,000 of these are preventable. For this work elaborate institutions are not required. We need chiefly plenty of paper, printers' ink, and trained nurses. Baby saving is the bargin counter of philanthropy. Infant welfare work is the great opportunity of the moment to do something in which everybody must believe. Just how much we can do is uncertain because of many factors, chief among which is the lack of vital statistics. Concerning the agencies for this work, we find that the bulk of effort is being done by private initiative, receiving in many cases some public aid, with the tendency toward the transference of the work to public responsibility. The job is clearly a public one. Public health generally is certainly a public function, and infant welfare is an integral part of the public health problem.

Institutions as Foster Mothers for Infants

Dr. Alfred F. Hess, New York: The sweeping denunciation of the institutional care of infants is not justified. If the administration is poor, the babies will suffer whether in homes or in asylums, and there is nothing inherent in either system which leads to health or to disease. At present there is no established statistical basis of approach to the question, as there is no approved method of calculating the death rate in an institution.

A Community Program of Public Health Nursing and Social Service

Mr. Richard P. Borden, Fall River, Mass.: Social agencies should be coordinated so that each shall work in its special department and all work together. Health is fundamental in community efficiency. Hospitals are expensive, and it pays to avoid the necessity of hospital care. Therefore, visiting nurses are necessary adjuncts of hospitals. Sources of accident and disease are ignorance and improper methods of living. Settlement houses teach the family that it is cheaper to prevent disease than to cure it, and in consequence, hospital costs are reduced. Day nurseries, children's societies and other social organizations are directly related to the hospital and its kindred agencies. While it is valuable to preserve entities of social organizations, business and benevolence should combine.

Miss Elizabeth Gordon Fox, Washington, D. C.: Believing that the old plan of specialization in public health nursing was wasteful, confusing and inefficient, in 1914, the Visiting Nurse Association, the Tuberculosis Society and the Department of Health of Dayton, Ohio, "pooled" their interests, and combined the three staffs of nurses into one under one superintendent, in one headquarters. While each governing body retained its own autonomy and raised its own budget, the work of the three was administered as a unit. The nursing specialties were eliminated, the city was divided into small districts, one nurse to a district, and each nurse did all kinds of nursing in her own district. The infant welfare work was greatly increased in quantity and quality as a result of this plan of centralization and generalization. The infant mortality rate fell from 133 during the four summer months of 1913 to eighty-five during the same period of 1914. This was felt to be largely due to the efficiency of the new plan of administration.

Special Versus General Nursing in Infant Welfare Work

Dr. H. J. Gerstenberger, East Cleveland, Ohio: The best results in public health and social work are to be secured by placing all of the work of a district in the hands of one worker who shall be supervised and directed by a physician who, on the basis of knowledge and common sense, is competent to have such supervision and direction.

Miss Marie Phelan, Chicago: The infant welfare nurse must be interested in the family and in the sanitary conditions of the home that she may create a proper environment for the baby. It is through her influence that the father is referred to the tuberculosis clinic and the nurse is welcomed to give information concerning the conditions of the home. The question of more than one nurse coming into the home has been greatly overestimated; in reality there is little fear of overlapping. In only two families in eighteen districts were the infant welfare nurse and the district nurse visiting at the same time. I think but few nurses are capable mentally and physically to look after every branch of nursing.

Dr. S. Josephine Baker, New York: If we are going to deal only with the sick baby, our ideas will be so diverted from the main purpose that our well baby is going to stand in the background. In our municipal work when we have tried to keep the well baby well our mortality has dropped sharply. The public health nurse from the point of view of the department of health is a sanitary officer with the education of a nurse. She is a teacher, but she is not like the district nurse, a nurse of the sick. There is great danger of overspecialization, but not necessarily so, if our ideals are kept clearly in mind.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

November, XXXVI, No. 11, pp. 517-566

1 Albany Hospital: Report of Department for Mental Diseases, for Year Ending September 30, 1915. J. M. Mosher, Albany.

American Journal of Public Health, Boston

November, V, No. 11, pp. 1103-1194

2 American Achievements and American Failures in Public Health Work. W. T. Sedgwick, Boston.
3 Public Health. C. S. Whitman, New York.
4 Development of American Public Health Endeavor. S. Smith, New York.
5 Appreciation of Henry Lomb. C. A. Barbour, Rochester, N. Y.
6 Responsibility of City in Tuberculosis Movement. T. B. Sachs, Chicago.
7 Increasing Organic Disease — New Public Health Problem. E. E. Rittenhouse, New York.
8 Marriage Health Certificate, Deeply Rooted Social Problem. O. Dowling, New Orleans.
9 Certain Sanitary Aspects of Candy Manufacture. E. H. Cummins, Boston.
10 Report of Committee on City Wastes; Economics of Waste Collection and Disposal. P. M. Hall, Minneapolis.
11 Improvement in Composition of Lactose Bile. T. W. Melia, New York.
12 Testing of Disinfectants. S. Rideal, London, and J. T. A. Walker, New York.

Annals of Surgery, Philadelphia

December, LXII, No. 6, pp. 641-776

13 *Hemangioma of Spinal Cord. S. Cobb, Boston.
14 *Conservative Treatment of Intrinsic Cancer of Larynx by Thyreocricotomy or Thyrotomy; Report of Three Cases. G. D. Stewart, New York.
15 Suppurative Pericarditis. G. B. Rhoden, Cincinnati.
16 Abdominal Skin-Flap in Radical Amputation of Breast. C. A. Elsberg, New York.
17 *Splenectomy for Splenic Anemia in Childhood and for Splenic Anemia of Infancy. H. Z. Giffin, Rochester, Minn.
18 Primary Sarcoma of Gallbladder; Report of Case. N. B. Carson and G. M. Smith, St. Louis.

19 Resection of Cardia for Carcinoma; Report of Cases. W. Meyer, New York.
20 Obturator Hernia; Report of Case. C. G. McMahon, Copperhill, Tenn.
21 Prostate Gland in Old Age. O. S. Lowsley, New York.
22 Giant-Cell Tumors of Tendon Sheaths; Report of Cases. F. Beckman, New York.
23 *Fascia Transplantation in Treatment of Old Fractures of Patella. D. B. Phemister, Chicago.
24 Case of Decompression Under Local Anesthesia. H. P. Cole, Mobile, Ala.
25 *Action of Radium on Transplanted Tumors of Animals. F. C. Wood and F. Prime, Jr., New York.

13. **Hemangioma of Spinal Cord.**—Six reported cases and one personal case are analyzed by Cobb. He says that the onset is usually slow, the paralysis not reaching its maximum for days or even months. In two instances, weakness of the feet was the first symptom, preceding paralysis of the legs by two weeks and by six months; in another, weakness of the right hand preceded the paralysis by two days. In three of the cases pain came on suddenly but was not followed by the paralysis for five days in one, two weeks in another, and five months in the third. A history of recurrent attacks after partial recovery appeared twice, while in four of the cases a single attack seemed sufficient to cause a permanent paralysis. Four of the histories note an onset with flaccid paralysis, described as "weakness," the spastic symptoms not coming on for a considerable time—two months, six months, and fourteen years in three of these, while in the fourth the patient died in the flaccid state. In short the symptomatology appears to be that of hemorrhage into the spinal cord or canal, generally recurrent if the patient survives the first paralysis. Death in two of the cases was due to respiratory failure, in two to decubitus, and in two others to operation, while one has no clinical history, and the other patient is alive at present.

Pathologically it is striking that in all of the cases the tumor involved the pia; in two the dura was also involved, and in two the cord substance was invaded. The level of the angiomas on the cord is variable; three were lumbar, one cervical, one cervicodorsal, two dorsal, and one was found on the corda equina. The tendency seems, therefore, to be toward a low position. In two of the cases there was widening of the vertebral canal in the region of the tumor. One of the most interesting features of Cobb's case is the occurrence of nevi on the skin in the same metamere as the angioma of the cord; that is to say, the membranes of the spinal cord in the vicinity of the tumor are supplied by the same nerve roots as the skin on which the nevi are found.

14. **Intrinsic Cancer of Larynx.**—According to Stewart laryngofissure is applicable to over one third of all cases of laryngeal cancer. It is exclusively adapted to endolaryngeal cancer in its incipient stages. A circumscribed movable tumor near the center of one vocal cord represents the most favorable case for laryngofissure. The operation is sometimes extended to cancer still movable but which has attacked the anterior commissure, the ventricle or the subglottic space. Laryngofissure is absolutely contraindicated in all cases in which the arytenoid cartilage and the interarytenoid fold are involved, also in other extrinsic cancer. It is not often enough performed and is sometimes attempted too late. Its extent should be absolutely determined beforehand, otherwise one should be prepared for a semi or complete laryngectomy. The mortality is small—0.2 per cent. Speech is always possible, often satisfactory.

17. **Splenectomy for Splenic Anemia.**—Because infancy is a transition period during which a reversion to the fetal type of hemopoiesis is likely to occur, Giffin maintains that the normal lymphocytosis of the infant's blood and its decided reaction to various toxic agents is always to be taken into account in the consideration of any case of infantile anemia. The adult form of splenic anemia as it occurs in children and the splenic anemia of infancy have many characteristics in common, and also certain distinctive differences, but splenectomy has been performed in only a few instances of the adult form of splenic anemia occurring in the first decade of life. One case of this character is reported by Giffin. A review of the literature of the splenic anemia of infancy (anemia pseudoleukemica of von Jaksch) shows that splenectomy has been performed in four instances of severe types of the disease, with marked immediate improvement.

23. **Fascia Transplantation in Old Fracture of Patella.**—In the case reported by Phemister after the greatest possible apposition of the fragments of the patella had been accomplished, there still remained a defect of 1 inch. This defect was bridged over by a free transplantation of the fascia lata. It was sutured above to the quadriceps, below to the tibiopatellar tendon, and at the sides to the lateral ligaments of the joint. Aseptic wound healing occurred.

25. **Action of Radium on Transplanted Tumors.**—According to Wood and Prime three factors only are important in the action of radium on tumors; time of exposure, amount of radium element, and distance between the radium tube and the tumor tissue. The removal of suitable filters of the larger part of the beta rays diminishes proportionately the effect of the radium, but the effect of the gamma rays is in accordance with the same general law which governs the beta rays. Sublethal exposures slow the growth of tumor cells for some time, while still shorter treatments seem to stimulate the cellular activities. Experiments show that when only pure gamma rays are used the necessary exposure is eight times as long as that required when the gamma and hard beta rays combined are employed, but as the latter are largely absorbed by 1 cm. of tissue, the gamma rays alone must be used for all deep work. The effect of radium radiations on tumor cells in vitro is less marked than is that on isolated cellular elements. This explains the fact that an exposure which will destroy a small metastatic nodule in man is quite ineffective in the case of a well vascularized primary carcinoma.

Archives of Internal Medicine, Chicago

December, XVI, No. 6, pp. 893-1073

26 Large Personal Factor in Blood Pressure Determinations by Oscillatory Method. E. S. Kilgore, San Francisco.
27 Analysis of Dr. Kilgore's Paper. J. Erlanger, St. Louis.
28 Quantitative Determination of Personal Factor in Blood Pressure Measurements by Auscultatory Methods. E. S. Kilgore, H. K. Berkley, A. H. Rowe and W. H. Stabler, San Francisco.
29 Fractional Method of Blood Pressure Determination — Contribution to Study of Blood Pressure in Cardiac Arrhythmias. E. S. Kilgore, San Francisco.
30 *Clinical Studies on Respiration; Acidosis of Chronic Nephritis. F. W. Peabody, Boston.
31 *Action of Vagi on Heart in Paroxysmal Tachycardia. G. C. Robinson, St. Louis.
32 *Carbohydrate Metabolism in Hyperthyroidism as Determined by Examination of Blood and Urine. H. R. Geyelin, New York.
33 *Production of Atrioventricular Rhythm in Man After Administration of Atropin. F. N. Wilson, Ann Arbor, Mich.
34 *Case in which Vagus Influenced Form of Ventricular Complex of Electrocardiogram. F. N. Wilson, Ann Arbor, Mich.
35 Oidiomycosis in California, with Special Reference to Coccidioidal Granuloma. E. C. Dickson, San Francisco.
36 Case of Acute Miliary Tuberculosis Showing Blood Picture of Acute Myelogenous Leukemia. M. Marshall, Ann Arbor, Mich.
37 Uric Acid Solvent Power of Urine Containing Hexamethylenamin (Urotropin) as Compared with that of Normal Urine. H. D. Haskins, Portland, Ore.
38 *Oxydase Reaction on Blood Smears. F. A. Evans, Baltimore.

30. **Acidosis of Chronic Nephritis.**—In mild cases of uncomplicated chronic nephritis, in which the phenolsulphonephthalein test shows a normal renal function, Peabody claims that there is usually little or no acidosis. More advanced cases, showing moderate or even extreme decrease in the phenolsulphonephthalein output, show an acidosis by the "alkali tolerance" test, but there may be no fall in the alveolar carbon dioxid tension. Only in very advanced cases is the acidosis usually so marked as to cause a decrease in the alveolar carbon dioxid tension. Most cases in which the alveolar carbon dioxid tension is below normal show a phenolsulphonephthalein output which is below 10 per cent. in two hours. On the other hand cases showing a phenolsulphonephthalein output of "traces" or less may have a normal alveolar carbon dioxid tension. The acidosis of chronic nephritis Peabody believes is due to a retention, resulting from inefficient renal excretion. Acidosis is probaby a very constant feature of uremia, but only in a limited number of cases is it of sufficient grade to cause definite

clinical symptoms analogous to those seen in advanced diabetes. In these cases the symptoms caused by the acidosis may be relieved by alkali therapy.

31. **Action of Vagi on Heart in Paroxysmal Tachycardia.**—Robinson reports observations on two cases of paroxysmal tachycardia in which the rapid heart rate could not be influenced by vagus pressure. These two cases are representative of those in which vagus pressure fails to abolish the tachycardia. The cause of the ineffectiveness is not, however, any permanent derangement of the cardiovagal inhibitory mechanism, as in both cases the heart rate was slowed by vagus pressure and increased by vagus paralysis with atropin. Robinson regards these cases as evidence that the influence of the vagi differs in degree on different parts of the heart, and that this difference probably depends on their anatomic distribution.

32. **Carbohydrate Metabolism in Hyperthyroidism.**—Twenty-seven cases of hyperthyroidism were studied by Geyelin. These varied from very severe to extremely mild ones, but all had sufficient symptoms or history or both to warrant the diagnosis. To control these observations, twenty-five other individuals have been studied. These include healthy adults and patients convalescing from various diseases. In only three of the twenty-five control cases, was there any glucosuria, either spontaneous or alimentary. Of the twenty-seven cases of hyperthyroidism, the first twenty ranged from cases of moderate severity to severe ones, while the last seven were mild, and in one case, there was some doubt as to the diagnosis. A majority of the symptoms, however, pointed to hyperthyroidism. Eighteen show a hyperglycemia, either fasting or from two and a half to three hours after breakfast. They all show either an alimentary or spontaneous glucosuria; in most of the cases both. And further, all those on whom the test was made show an increase above the preexisting blood-sugar level two hours after 100 gm. of glucose, which was proportionally much greater than in any of the normal controls, most of whom showed a return to preformed values after this test. The alimentary glucosuria was usually quite marked, and in one patient persisted for three days. Of the mild cases, three show distinct lowering of the carbohydrate tolerance, as shown by alimentary and spontaneous glucosuria, and in two cases there was an alimentary hyperglycemia.

A blood-sugar reading of 0.1 per cent. or over, Geyelin says, is to be considered a hyperglycemia. Hyperglycemia is a common accompaniment of hyperthyroidism. In the moderate and severe types of this disease, it occurs in 90 per cent. of the cases studied. In mild cases or during latent periods, normal blood-sugar values are commonly obtained. Glucosuria, either spontaneous or alimentary (100 gm. of glucose), is an equally constant symptom, and encountered much more often than has been observed hitherto. Alimentary hyperglycemia (two hours after 100 gm. of glucose) and alimentary glucosuria are found not uncommonly in the mild cases, whereas hyperglycemia (fasting or postprandial) and spontaneous glucosuria are usually absent. As compared with normal individuals, there is a slower return to fasting blood-sugar values after doses of glucose have been given. This is more marked in proportion to the severity of the case. Thyroid extract when fed to patients with myxedema, who previously showed normal blood-sugar values, produces hyperglycemia similar to that found in cases of hyperthyroidism. The diagnostic significance of lowered tolerance to carbohydrates in hyperthyroidism is of great importance. The finding of glucosuria and hyperglycemia in other pathologic conditions, such as fever, alcoholism, asphyxia, neurasthenia and in the various endocrinopathies, somewhat nullifies its significance; but if these conditions can be excluded, its presence is highly suggestive.

33. **Atrioventricular Rhythm in Man.**—It was found possible by Wilson to produce A-V rhythm in a large proportion of young persons by vagus stimulation during the intermediate period between the hypodermic injection of atropin and the appearance of its maximum effect. In three cases, one normal and two cardiac cases, A-V rhythm appeared spontaneously under this drug. In none of the individuals of the present series who had apparently normal hearts was it possible to produce A-V rhythm before the drug had been given. This was possible, however, in two patients with cardiac disease. It was not possible to produce A-V rhythm after the atropin effect had reached its maximum in any of the subjects investigated. The special susceptibility of the heart toward A-V rhythm during the early action of atropin is due to a selective action of this drug on the vagus terminations in the A-V node, in that it paralyses these before it paralyses those in the sinus node. In two pathologic cases the A-V rhythm which appeared after atropin exhibited unusual features. Three patients complained of marked palpitation as a result of simultaneous contraction of auricles and ventricles during A-V rhythm.

34. **Ventricular Complex of Electrocardiogram.**—The case reported by Wilson showed at different times four distinct rhythms and at least three types of ventricular complexes. In the first rhythm the ventricular complexes were normal and the pace-maker was in the normal location. In the second rhythm the ventricular complexes were characteristic of a block in the right branch of the His bundle. These abnormal ventricular complexes were usually but not always associated with an atrioventricular rhythm originating in the upper levels of the junctional tissues. Both the A-V rhythm and the abnormal ventricular complexes could be produced by vagus stimulation and when spontaneously present could be abolished in favor of the normal rhythm by the administration of atropin. Rhythm 3 appeared during the early stages of atropin action and at no other time. The ventricular complexes of this rhythm were abnormal and suggested a block in the left branch of the His bundle. The pace-maker was situated in the region of the A-V node. Ventricular complexes transitional in form between those of the normal rhythm and those of Rhythm 3, occurred, however, while the pace-maker was situated at the sinus node. It is probable therefore that the abnormality of the ventricular complexes of Rhythm 3 did not depend on the abnormal site of origin of this rhythm. Rhythm 4 was a paroxysmal tachycardia which originated at the same point as Rhythm 3 and which was associated with the same type of ventricular complex. The various changes in the mechanisms of the heart beat observed in this case occurred, in a great measure at least, in response to changes in vagus control.

38. **Oxydase Reaction on Blood Smears.**—Evans summarizes his method as follows: 1. Use blood smears as fresh as possible, and certainly not more than six weeks old. 2. Fix six to eight hours in the vapor of 4 per cent. formaldehyd solution in a closed jar. 3. Stain eight minutes in a saturated aqueous safranin or a 2 per cent. aqueous pyronin solution; wash, and dry immediately. 4. Examine the smear and become familiar with the appearance of the various cell types with the nuclei thus stained. 5. (a) Put one drop of Solution 1 (less than three weeks old) and one drop of Solution 2 (less than four days old) on a slide, mount the smear in this and examine at once; or (b) Mount the smear film side upward on a slide and put Solutions 1 and 2 directly on the smear, watch the reaction with the low power objective progress to its height, and at the end of two minutes dry and examine with the high dry objective. Evans has found this procedure a convenient and reliable method on blood smears for demonstrating the presence or absence of oxydase granules in many varieties of white blood cells, and by reason of the differentiation between cells of myeloid and lymphoid origin made possible, gives a preparation that is of great value in determining the status and origin of white blood cells of uncertain identity.

Archives of Ophthalmology, New Rochelle, N. Y.

November, XLIV, No. 6, pp. 611-705

39 Position of Sclerotomy with Especial Reference to Danger from Late Infection. T. H. Butler.
40 Ciliary Glands. W. C. Finnoff, Denver.
41 Malignant Uveitis Treated with Thyroid Extract. J. Bordley, Jr., Baltimore.
42 Gram Negative Diplococci Occurring in Conjunctival Sac. R. Blue, Chicago.
43 Primary Tumor of Optic Nerve Successfully Removed, with Preservation of Eyeball, by Kroenlein Method. A. Knapp, Chicago.
44 Case of Cyclical Third-Nerve Paralysis. G. Groethuysen, Munich.

Arizona Medical Journal, Phoenix

November, III, No. 11, pp. 1-33

45 Relation of Cancer Research to Clinical Medicine. W. O. Sweek, Phoenix.
46 Chronic Appendicitis in Contradistinction to Subacute Form. C. S. Vivian, Humboldt.
47 Cesarean Section; Report of Two Cases. A. J. Murrietta, Jerome.
48 Surgical Indigestion. A. L. Blesh, Oklahoma City.

Arkansas Medical Society Journal, Little Rock

November, XII, No. 6, pp. 139-161

49 Why We Fail to Diagnose Tuberculosis at Proper Time. S. E. Thompson, Carlsbad, Texas.
50 Visceroptosis. M. D. Ogden, Little Rock.
51 General Anesthesia. M. G. Daly, Little Rock.

Boston Medical and Surgical Journal

December 9, CLXXIII, No. 24, pp. 867-904

52 Medical and Social Aspects of Syphilis of Nervous System. A. Post, Boston.
53 Examination and Prophylaxis for Syphilitic Patients and Their Families. (To be continued.) H. M. Wright, Boston.
54 *Bladder Tumors in Young. R. F. O'Neil, Boston.
55 *Study of Kroenig's Isthmus in Pulmonary Tuberculosis. W. C. Klotz, Los Angeles.
56 Intussusception. W. E. Ladd, Boston.
57 Some Uncommon Types of Skin Disease. A. J. Nute, Boston.

December 16, No. 25, pp. 905-940

58 *Disinfection of Septic Joints. F. J. Cotton, Boston.
59 *Bacterin Treatment of Certain Chronic Pyogenic Dermatoses. C. C. Dennie, Kansas City, Mo., and J. H. Bufford, Boston.
60 Alopecia Syphilitica. D. W. Montgomery, San Francisco.
61 Examination and Prophylaxis for Syphilitic Patients and Their Families. H. M. Wright, Boston.
62 Estimate of Cost of Social Work in Connection with Examination and Treatment of Other Members of Families of Syphilitic Patients. M. C. Jarrett, Boston.
63 Economic Facts of Syphilis Problem. D. Gregg, Boston.
64 Case of Fracture of Transverse Processes of Fifth Lumbar Vertebra. L. T. Brown and W. J. Dodd, Boston.
65 Case of Dermatitis Medicamentosa. W. S. Walsh, Providence, R. I.
66 Chemical Aid in Securing Spirocheta Pallida from Syphilitic Lesions. H. D. Lloyd, Boston.

54. **Bladder Tumors in Young.**—Vesical tumors in children, O'Neil says, are a very great rarity. The great majority appear before the fifth year. They are of the connective tissue type and are clinically and pathologically malignant, except in rare instances. Difficulties of micturition are generally the earliest symptom; in the absence of stricture they should excite suspicion. Straining is common. Early diagnosis and operation offer the only hope of recovery.

55. **Kroenig's Isthmus in Pulmonary Tuberculosis.**—Klotz maintains that unless the disparity of the apical percussion field, as expressed in terms of Kroenig's isthmus is marked, it does not necessarily point toward tuberculosis of the corresponding side; that such disparity is also of much less significance on the right side than it is on the left; and that in most instances the disparity of the apical percussion fields is simply due to anatomic changes, unrelated to tuberculosis.

58. **Disinfection of Septic Joints.**—The technic which Cotton emphasizes in the surgical treatment of infected joints may be summarized as follows: Opening of the joint; irrigation for fifteen minutes (by the watch) with a full stream of 1 to 15,000 corrosive sublimate; a flushing out of the excess with salt solution; then a water-tight closure of the capsule by mattress and single sutures in such a way as to leave the synovial membrane cut edge to cut edge, as accurately as may be. Usually the membrane is so swollen as to make this really possible. The external wound is left wide open or nearly so, for the author says, real disinfection of the external soft tissues is not practicable. After operation there may or may not be an effusion into the joint; if an effusion comes it goes again within one to three days, and is not accompanied by temperature or by any considerable discomfort. Cotton has not in these cases, with two or three exceptions, resorted to traction for the separation of joint surfaces. There has seemed to be no pain factor constituting a clinical demand for such treatment, and no theoretical reason for it, for these joints show little or no spasm. About two dozen cases have been treated by this technic, excluding gonococcus cases, not less than fifteen of them representing infections by staphylococci or streptococci; the majority staphylococcus infections. There have been two failures; one a punctured wound of the knee in a male adult. Regaining in the end a good leg. The second case was a knee with an epiphyseal staphylococcic infection in a boy of 3; cleaned out and sutured; later the joint broke down and an ankylosis resulted.

59. **Bacterin Treatment of Pyogenic Dermatoses.**—Seventy cases were selected by Dennie and Bufford for the experiment: acne vulgaris, thirty-five cases; furunculosis, twenty-one cases; folliculitis, fourteen cases. The seventy cases were roughly divided into two groups, one of which was to receive only autogenous and the other stock preparations. In both instances, however, the bacterins employed were made by the authors themselves. No commercial products were used. When the autogenous bacterins were made, a large amount was prepared and the excess used as the stock preparations. An initial dose of not less than one hundred million and not over four hundred million killed organisms was given. The last injection was often two billion. The total number of doses rarely exceeded ten and the interval between was from four to ten days. The administration of bacterins was governed by the local reaction at the point of injection. If this reaction did not occur either at the first or any of the subsequent injections, a new preparation was made and administered. The general reaction was usually so slight that it escaped the attention of the patient. When there was an increase in the intensity or number of eruptive elements, the following dose was much smaller and was given when the untoward symptoms had subsided. If the patient improved up to certain point and then remained at a standstill, a new bacterin was prepared and administered. If the patient grew progressively worse after each injection of bacterin, this mode of treatment was discontinued.

The best results were secured in furunculosis. The action of bacterins in the treatment of sycosis was erratic; in one case of twenty years' duration in which external treatment had been faithfully used for five years and in which stock bacterins had been administered, autogenous bacterins were used with remarkable success. On the other hand two cases were much aggravated by this form of treatment. The average number of doses administered in successful cases was, eight in acne, four in furunculosis and four in sycoses. In nearly all cases the initial dose was two hundred million, and the final, one to two billion, killed organisms. The most favorable interval between doses was found to be five days in acne, four days in furunculosis and seven days in sycosis.

Bulletin of Johns Hopkins Hospital, Baltimore

December, XXVI, No. 298, pp. 391-422

67 *Diagnostic Value of Colloidal Gold Reaction; Method of Preparation of Reagent. S. R. Miller, N. D. Brush, J. S. Hammers and L. D. Felton, Baltimore.
68 *Case of Pulmonary Moniliasis in United States. T. R. Boggs and M. C. Pincoffs, Baltimore.
69 Mixed Tumors (Chondrofibro-Epithelioma) of Choroid Plexus. W. H. Burmeister, Chicago.
70 *Case of Heart Block; Recovery. E. W. Bridgman and J. T. King, Jr., Baltimore.
71 Valuable Additions to Library of Johns Hopkins Hospital. H. A. Kelly, Baltimore.

67. **Diagnostic of Colloidal Gold Reaction.**—This study confirms the conclusions advanced by Miller and Levy in 1914.

68. **Case of Pulmonary Moniliasis.**—With a negative family and personal history the patient whose case is cited by Boggs and Pincoffs applied for treatment on account of what she called a "boil" in the left axilla, which had been present and gradually increased during the three months previous. She had had little or no pain, nor had there been any discharge. On examination a tumor was found in the left breast and the diagnosis of mammary carcinoma with axillary metastases was made. The patient refused operation. Eight months afterward a large fluctuating axillary abscess was incised and drained. At this time there was no cough nor expectoration observed. Four days later she was discharged and told to return for dressings. This she was unable to do, and after five days at home she was admitted to the hospital. During this interval she had developed a severe cough with profuse expectoration of a reddish gray material. The patient was very ill; temperature, 102. The left mammary

gland was larger than the right, and in its lower right quadrant there was a hard, irregular mass; this was freely movable over the underlying tissues and the skin was not adherent to it. The nipple was not retracted and not apparently connected with the mass. The remainder of the gland was of a firmer consistency than normal. The right breast was normal. About 5 cm. from the left arm on the anterior axillary border there was a sinus-opening about 1.5 cm. in diameter; the sinus tract extended upward and posteriorly for about 4 cm. There was a slight sanguineous discharge from it. The infraclavicular and supraclavicular fossae were obliterated by brawny edema of the tissues, which were reddened and hot to the touch. The shoulder and upper arm were diffusely swollen and there was some edema and cyanosis of the forearm and hand. At the end of the third week after a profuse hemorrhage from the sinus, without any hemoptysis the patient died.

In the tissues examined the authors found an organism in close relation to *Monilia candida* (Bonorden). They have adopted the generic name *Monilia* as distinguishing it from *Endomyces albicans* which it somewhat resembles, ascosporulation being an accepted determining feature of the latter genus. Their *Monilia* is morphologically indistinguishable from that described by Ashford for tropical sprue. The organism is actively pathogenic for rabbits, intravenous injection producing disseminated lesions in the kidney cortex, intestinal lymph follicles and liver, as well as in the striped and unstriped muscles, death occurring in one to eight days. Intratracheal injection in rabbits led to localized pneumonia-like lesions in the lungs with pleurisy and late involvement of other viscera. The organism has been recovered in pure culture from the experimental lesions of rabbits.

70. **Case of Heart Block.**—The case reported by Bridgman and King is that of a negro man, with complete heart block, Adams-Stokes syndrome, and a strongly positive Wassermann reaction, who, after antisyphilitic treatment for a period of less than five weeks, developed practically normal conduction time and became symptomatically well, the Wassermann reaction being negative on two occasions four months later. Of special interest was the appearance of electrophonograms which show auricular sounds during complete block, and after normal rhythm had been resumed. The time of the auricular sound is just after the onset of auricular systole, and no sound is apparent at the end of auricular systole.

California State Journal of Medicine, San Francisco

December, XIII, No. 12, pp. 455-496

72 Amputations and Their After-Treatment. L. Eloesser, San Francisco.
73 Clinical Records. E. S. Kilgore, San Francisco.
74 Application of Anoci-Association to Obstetrics. C. L. Hoag, San Francisco.
75 Treatment of Congenital Syphilis. H. Lisser, San Francisco.
76 Routine Roentgenographic Demonstration of Gallstones. C. W. Lippman, San Francisco.
77 Use of Roentgen Ray as Aid in Surgical Diagnosis. F. R. Fairchild, Woodland.
78 Which Is Preferable Operation, Perineal or Suprapubic Prostatectomy? C. R. Harry, Stockton.
79 Twilight Sleep. M. Cosgrove, San Francisco.
80 Glandular Polypus of Colon. G. H. Aiken, Fresno.

Cleveland Medical Journal

October, XIV, No. 10, pp. 631-712

81 Fight Against Tuberculosis in Cleveland. R. H. Bishop, Jr., Cleveland.
82 Opportunities for Social Service at Cleveland City Hospital. H. Wright, Cleveland.
83 Importance of Prophylaxis in Care of Infants and Young Children. C. W. Wyckoff, Cleveland.
84 Possibilities of Future Development in Service Rendered by Hospital to Community. A. R. Warner, Cleveland.
85 Prevention of Systemic Diseases Arising from Mouth Infections and Purpose and Plan of Research Institute of National Dental Association. W. A. Price, Cleveland.
86 Prevention of Blindness. H. L. Leete, Cleveland.
87 Problem of Feebleminded, Insane and Epileptic. H. H. Drysdale, Cleveland.
88 Treatment for Crippled Children at Rainbow Hospital, Cleveland. A. Patton, Cleveland.
89 Hospital and Public Pocket Book. E. Street, Cleveland.

Delaware State Medical Journal, Wilmington

September, V, No. 10, pp. 1-26

90 Use of Liquid Chlorin for Sterilizing Water. J. A. Kienle, Wilmington.
91 Retrorectal Infections. C. F. Martin, Philadelphia.

Journal of Cutaneous Diseases, New York

December, XXXIII, No. 12, pp. 787-866

92 Precancerous Dermatoses; Sixth Case of Type Recently Described. J. T. Bowen, Boston.
93 Pathology of Syphilis. J. A. Fordyce, New York.
94 *Comparative Toxicity of Various Preparations of Mercury. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.
95 Cutaneous Lesion Caused by New Fungus (Phialophora Verrucosa). C. G. Lane, Boston.
96 *Heliotherapy in Diseases of Skin; Report of Cases. H. P. Towle, Boston.

94. **Toxicity of Mercury.**—It is stated by the authors that the toxicity of the various mercurial salts is directly proportionate to the amount of pure mercury contained, and that the inorganic salts, as represented by mercuric chlorid, are no more toxic than the numerous organic combinations that are commonly employed. The differences in the molecular structure of the mercury compounds tested by the authors were found to be of relatively little importance as affecting their toxicity. Mercuric chlorid was fatal, on the average, in intravenous doses above 2 mg. per kilogram of body weight; administered intramuscularly it was fatal on the average, above 6 mg. per kilogram of body weight. The average relationship as to the toxicity between the intravenous and intramuscular administration of mercury, in general, was about 4 to 1.

The authors found that the insoluble preparations such as gray oil, calomel and the salicylate of mercury are absorbed at the rate of a little over 1 per cent. of the injected amount per day. Even at the end of six or seven weeks, almost 50 per cent. of the mercury of insoluble preparations may be unabsorbed at the site of the injection, hence the injection of the usual doses of insoluble mercurial compounds at weekly intervals, must invariably lead to accumulation of the drug in the tissues. It is advised that insoluble mercurial injections be given only by the skilled physician after careful consideration of the dose and of the intervals of administration. Mercury has a great affinity for the cells of the kidney, and this organ is one of the earliest involved in mercurial intoxication; hence during the intensive treatment with mercury, the necessity of careful examination of the urine from time to time should be emphasized. Calcification of the degenerated tubular cells has been found within forty-eight hours after the administration of mercury, and always occurs in severe mercury nephritis, irrespective of the salt administered or the route of injection.

96. **Heliotherapy in Diseases of Skin.**—So far as the series of a case cited by Towle shows, the lesson is that graded exposures of the body to the rays of the sun promote general bodily vigor, discourage the growth of bacteria, decongest inflammation, encourage resorption of pathologic exudates and of scar tissues, stimulate epidermization, cellular multiplication and reconstruction, and, above all, tend to relieve pain. Several varieties of pus-forming affections were treated by heliotherapy, invariably with positive results.

Lancet-Clinic, Cincinnati

November 20, CXIV, No. 21, pp. 445-464

97 Report of Neurologic Department of Cincinnati Hospital from 1894 to 1914, Inclusive. R. Ingram, Cincinnati.
98 The Crystalline Lens System and Its Relation to Cataract Formation. L. Stricker, Cincinnati.

November 28, No. 22, pp. 465-484

99 Etiology and Treatment of Heart Disease. P. D. White, Boston.
100 Four Cases of Acute Abdomen; Four Necropsies; Four Surprises. J. F. Baldwin, Columbus.
101 Principles of Harelip and Cleft Palate Surgery. J. R. Eastman, Indianapolis.
102 Psychotherapy of Inoperable Cancer. E. O. Kane, Kane, Pa.
103 Rest; Most Important Single Factor in Treatment of Tuberculosis. L. B. Morse, Hendersonville, N. C.

Maine Medical Association Journal, Portland

November, VI, No. 4, pp. 169-192

104 Senile Heart. H. R. Farris, Oxford.
105 Blood Pressure and Some of Its Clinical Values. C. H. Witherell, Oakland.

Medical Record, New York

December, 4, LXXXVIII, No. 23, pp. 945-990

106 Milk-Borne Septic Sore Throat — New Health Problem. H. M. Biggs, New York.
107 Some of Automatic Balances in Human Body. R. C. Newton, Montclair, N. J.
108 Women in Medical Profession. M. Glasgow, New York.
109 Fermented Milk and Whey in Infant Feeding. A. E. Mucklow, Brooklyn.
110 Connellan-King Diplococci Infections of Throat, with Especial Reference to Rheumatism; Report of Cases. J. J. King, New York.
111 Rectal Operations. W. F. Burrows and E. C. Burrows, New York.

December 11, No. 24, pp. 991-1032

112 Case of Spontaneous Pyopneumothorax Complicated by Hydropneumopericardium or Pyopneumopericardium. A. Meyer, New York.
113 Case of Auricular Flutter Accompanying Acute Endopericarditis. S. Neuhof, New York.
114 Five Teaspoons Removed from Intra-Abdominal Abscess After Perforating Small Intestine. B. T. Tilton, New York.
115 Ideal Nasolaryngeal Inhaler. C. E. Dressler and A. Kahn, New York.
116 Causes and Cure of Infective Diseases of Kidneys. D. B. McCartie, Newark, N. J.
117 Study of Psychoses Associated with Cerebral Arteriosclerosis. J. Nack, Washington, D. C.
118 Gastro-Albumorrhea in Gastric Cancer. M. Kahn and I. Jacobowitz, New York.
119 How to Blow the Nose. E. H. Griffin, New York.

Military Surgeon, Chicago

November, XXXVII, No. 5, pp. 411-522

120 Asphyxiating Gases in Warfare. G. A. Lung, U. S. Navy.
121 Brain Surgery in War. J. Frank, Chicago.
122 Transportation of Ambulance Companies. E. C. Jones, U. S. Army.
123 An Endeavor to Improve On First Aid Tag Now in Use in United States Army. H. H. Smith, U. S. Army.
124 Real Medical Reserve Corps. G. M. Blech, Chicago.
125 Syphilis as Cause of Mental Disease in Military Service. L. L. Smith, U. S. Army.

New York Medical Journal

December 4, CII, No. 23, pp. 1121-1168

126 Arteriosclerosis as Cellular Disease. L. F. Bishop, New York.
127 Prostatisme Sans Prostate. (To be continued.) A. Randall, Philadelphia.
128 Bollinger Case. H. J. Haiselden, Chicago.
129 Puerperium. J. O. Arnold, Philadelphia.
130 Duodenal Ulcer. S. F. Mullins, Danbury, Conn.
131 Syphilis of Cardiovascular and Renal Systems. J. H. Barach, Pittsburgh.
132 Case of Persistent (Eleven Years) Gonococcus Infection. M. Zigler, New York.
133 Gastro-Enterostomy. J. B. Haeberlin, Chicago.

December 11, No. 24, pp. 1169-1216

134 History of Pellagra. C. H. Lavinder, Ellis Island.
135 Epidemiology of Typhus. J. F. Anderson, New Brunswick, N. J.
136 Typhus in Serbia. J. Rudis-Jicinsky, Chicago.
137 Prostatisme Sans Prostate. A. Randall, Philadelphia.
138 Dislocation of Semilunar Bone; Report of Case. E. L. Bebee, Buffalo.
139 Artificially Fed Infants. I. H. Goldberger, New York.
140 Nontoxic Antiseptic. D. H. Stewart, New York.
141 Diabetes. L. H. Levy, New Haven, Conn.
142 Chauffeur's Knee. G. F. Boehme, Jr., New York.

December 18, No. 25, pp. 1217-1264

143 Maternity Insurance. L. K. Frankel, New York.
144 Soluble Radium Salts in Organic Nervous Diseases. A. Gordon, Philadelphia.
145 Roentgen Ray Diagnosis of Gastric Lesions. J. W. Squires, Charlotte, N. C.
146 New Tonsil Depressor. J. H. Heacock, New York.
147 Treatment with Mixed Vaccines. A. A. Thibaudeau, Buffalo.
148 Retroversion of Uterus. A. N. Clagett, Chicago.
149 Allen Treatment in Diabetes Mellitus. A. Bookman, New York.
150 Weight Increase. R. H. Rose, New York.
151 Tetany in Adult Following Poisoning from Ergot. H. W. Emsheimer, New York.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

November, XXI, No. 5, pp. 183-226

152 First Aid Conference. J. C. Bloodgood, Baltimore.
153 Three Pseudonyms of Early Tuberculosis. F. H. Smith, Abingdon.
154 Obstructive Hyperemia as Substitute for Irrigation and Packing in Certain Infections. M. P. Rucker, Richmond.
155 Diphtheria Diagnosed Therapeutically. O. C. Brunk, Richmond.

Ophthalmic Record, Chicago

November, XXIV, No. 11, pp. 547-600

156 Ocular Phenomena Accompanying Three Cases of Gastro-Intestinal Disorder. H. Woods, Baltimore.
157 Iritis Due to Influenza. W. Reber, Philadelphia.
158 Systemic Diseases Affecting Ocular Tissues. F. Brawley, Chicago.
159 Relations of General Diseases to Ophthalmology. C. P. Small, Chicago.
160 Operation for Secondary Cataract. A. S. Green and L. D. Green, San Francisco.
161 Congenital Aphakia with Microcornea. E. Adams, Chicago.

Pennsylvania Medical Journal, Athens

November, XIX, No. 2, pp. 65-148

162 Public and Medical Profession, Square Deal. H. B. Favill, Chicago.
163 *Treatment of Fractures, Lost Art. J. B. Roberts, Philadelphia.
164 Treatment of Complicated Fractures and Present Opinion of Operative Treatment. J. B. Lowman, Johnstown.
165 *Rectal Anesthesia in Thyroidectomy. W. Lathrop, Hazelton.
166 *Heart of Athlete; Its Prospect and Protection. R. N. Willson, Philadelphia.
167 Evil Effects of Delayed Operation in Malignancy. C. B. Longenecker, Philadelphia.
168 *Report of Commission on Cancer. J. M. Wainwright, Scranton.
169 Syphilis of Nose and Throat. C. P. Grayson, Philadelphia.

163 and 165. Abstracted in THE JOURNAL, Oct. 16, 1915, pp. 1399 and 1400.

166 and 168. Abstracted in THE JOURNAL, Oct. 9, 1915, pp. 1304 and 1303.

Public Health Journal, Toronto

November, VI, No. 11, pp. 533-590

170 Medical Profession and War; Cancer Problem. W. H. B. Aikins, Toronto.
171 Duty of City to Child. C. S. Walters, Hamilton.
172 History of Organization of Babies' Dispensary Guild, Hamilton. J. H. Mullen, Hamilton.
173 Scope and Function of Medical Staff of Babies' Dispensary, Hamilton. W. L. Cody, Hamilton.
174 Possibilities of Women's Work in Relation to Babies' Dispensary, Hamilton. H. M. W. Smith, Hamilton.
175 Opportunities of Medical Health Officers. W. H. Hattie, Nova Scotia.
176 Immigration of Mentally Unfit. J. D. Page, Quebec.

Texas State Journal of Medicine, Fort Worth

November, XI, No. 7, pp. 361-412

177 Drainage of Peritoneal Cavity. W. W. Grant, Denver.
178 Intestinal Paresis with Special Reference to Postoperative Complications. F. W. Parham, New Orleans.
179 Anatomy and Physiology of Colon from Surgical Standpoint. K. H. Aynesworth, Waco.
180 Relation of Appendicitis and Duodenal Ulcer. C. W. Flynn, Dallas.
181 Sliding Hernia of Colon. R. W. Knox, Houston.
182 Peritoneal Adhesions, Preoperative and Postoperative. T. J. Bennett and Z. T. Scott, Austin.
183 Use of Fascia in Plastic Mastoid Work. E. R. Carpenter, El Paso.
184 Important Symptoms which Require Labyrinthine Operation; Report of Cases. J. W. Head, Fort Worth.
185 Two Cases of Labyrinth Disease with Operations. J. H. Foster, Houston.
186 Splanchnoptosis. C. A. L. Reed, Cincinnati.

Washington Medical Annals

November, XIV, No. 6, pp. 297-383

187 Scarlet Fever; Morbidity and Fatality. H. H. Donnally, Washington, D. C.
188 Case of Hereditary Syphilis. M. A. Reasoner, U. S. Army.
189 Evolution of Man in Light of Recent Discoveries and Its Relation to Medicine. A. Hrdlicka, Washington, D. C.
190 Two Cases of Spastic Paralysis. R. F. Dunmire, Washington, D. C.
191 Rectal Examinations During Labor. P. Willson, Washington, D. C.
192 Feeding the Sick, Well and Economical Feeding. P. S. Roy, Washington, D. C.
193 *Case of Boric Acid Poisoning. P. Willson, Washington, D. C.
194 Nitrous Oxid and Oxygen in Obstetrics. J. A. Talbott, Washington, D. C.
195 Case of Amputation of Right Upper Extremity Including Clavicle, Scapula and Humerus. G. T. Vaughan, Washington, D. C.
196 Case of Congenital Visceral Syphilis. B. M. Randolph, Washington, D. C.
197 Why Members of Medical Profession Should Receive Higher Compensation Than Other Professions and Scientific Workers. G. H. Heitmuller, Washington, D. C.

193. **Case of Boric Acid Poisoning.**—A baby 7 weeks and 6 days old was given about 3 ounces of a saturated solution of boric acid instead of boiled water. Shortly after this the baby was nursed, but vomited during the nursing, so that this was discontinued and 3 more ounces of the boric acid solution were given. This was in the afternoon. In the evening

the baby had many copious movements which soon became nothing but clear, jelly-like mucus. The vomiting and purging continued for about thirty-six hours, gradually decreasing in severity. The day following the administration of the poison there was a little blood in the movements and once a considerable stain in the vomitus. The baby refused to nurse and rapidly lost weight. There was no fever. So far the picture was one of an acute gastro-enteritis of moderate severity, from a chemical irritant. Two days after the first ingestion there appeared a slight miliary eruption on the neck, chest and back. The disease ran its course rapidly and the peeling was completed in about ten days. The baby rapidly regained a normal condition.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

July, XXXVIII, Parts I-II, pp. 1-190

1 Hughlings Jackson on Aphasia and Kindred Affections of Speech. H. Head.

British Journal of Children's Diseases, London

November, XII, No. 143, pp. 321-352

2 Congenital Heart Block. T. R. Whipham.
3 *Occurrence of Acidosis in Children. E. C. Williams.
4 Case of Primary Bronchial Diphtheria. W. M. Smith.
5 Two Cases of Lymphangioma of Conjunctiva. E. M. Maxwell.

3. **Occurrence of Acidosis in Children.**—Williams has analyzed the symptoms in thirteen cases. Of these cases five occurred in boys, the remainder being girls. All the children were under 11 and over 3 years of age. Three patients presented on admission symptoms suggestive of meningitis, but on examination of the cerebrospinal fluid, which was under considerable pressure, showed no cytologic changes or organisms; examination of the urine, however, showed the presence of acetone and diacetic acid in varying degrees. Two cases of mussel poisoning (mytiloxtoxin) and one case of ice-cream poisoning showed marked acidosis. In the two cases of mussel poisoning nervous symptoms were predominant, whereas in the ice-cream poisoning there was pyrexia with great remissions of temperature. In one patient acidosis preceded pneumonia (for seven days) and in another patient the acidosis occurred during the course of a pneumonia, and in a third patient whose urine was found on admission to contain sugar, the sugar quickly disappeared, but the patient developed signs of pneumonia with acidosis, which were followed by an empyema. In one case admitted in a practically moribund condition, the postmortem revealed suprarenal hemorrhage. One patient sent into the hospital as dysentery suffered from vomiting, colicky pains in the abdomen, with blood and mucus, symptoms suggestive of an intussusception; the intense acidity of the urine and the quick response to treatment by alkalies showed the symptoms to be caused by acidosis due to some unknown cause. A child admitted into the hospital drowsy and irritable, with a high temperature developed at the end of a week a systolic murmur. The urine on admission was acid and contained acetones and diacetic acid (no salicylates were given); alkali treatment and glucose caused loss of drowsiness.

Williams urges that it is important in all cases of doubtful origin in young children that the urine should always be carefully examined for diacetic acid and acetones, as well as for the *Bacillus coli*. Treatment consisted of sodium bicarbonate in doses up to 1 dram hourly in an effervescent mixture, and potassium citrate, half a dram, with glucose, 1 dram, by rectum every four hours.

British Medical Journal, London

November 27, II, No. 2865, pp. 769-800

6 Spinal Injuries of Warfare. G. Holmes.
7 *Malignant Tumor of Kidney. R. J. Willan.
8 *Easy Method of Detecting S. Pallida and Other Spirochetes. A. C. Coles.
9 Simple Method for Cultivation of Anerobic Organisms. L. Dimond.
10 Treatment of Wound Infections by Antiseptics. C. A. Morton.

7. **Malignant Tumor of Kidney.**—Excluding children, 63.2 per cent. of the fifty-nine cases analyzed by Willan occurred between the ages of 45 and 65. Ten cases occurred in children under the age of 10; in each case the condition was sarcoma. Of the 49 adult cases, 14 occurred between the ages of 45 and 55, a percentage of 28.5. Of the series 63.8 per cent. were males. In thirty-one instances the malignant growth affected the left side and in twenty-six the right side. In two cases the side affected was not stated. In seven cases of the series the actual onset symptom is not stated. Of the remaining fifty-two cases, painless hematuria was observed in fourteen cases. In ten cases the illness was ushered in by acute renal colic, while in ten other cases a painless swelling found in the flank was the first evidence of anything wrong; nine cases began with chronic pain in the flank, while five patients suffered from cachexia before any sign of malignant growth of the kidney became manifest. In two cases there was increased frequency of micturition at onset, another went to his physician for a varicocele, while the remaining one had "swelling of the bowels." In eleven instances there had never been any pain before the case came under observation. Either painless hematuria or the accidental discovery of a flank swelling, separately or in combination, led the patient to think there was something amiss.

Hematuria is an important link in the chain when making a diagnosis of malignant disease of the kidney; this symptom was definitely present in twenty-four cases out of fifty-two; that is, in 46 per cent. A renal swelling was present in forty-nine cases; in four cases it was definitely stated that no tumor could be palpated, while in six cases the records are incomplete. Cachexia was an onset symptom in five cases. In three cases there was a left-sided varicocele, in addition to a malignant renal tumor on the same side. Two of the patients had retention of urine due to clotting following painless hematuria, and in each case the physician was only called in when the patient had complete retention. One case of sarcoma was complicated by persistent glucosuria; he did well after nephrectomy. Several of the cases had chronic nephritis.

8. **Method of Detecting Spirochetes.**—Coles claims that the method which he has devised renders the detection of *S. pallida* or any other spirochete as easy as that of the tubercle bacillus in sputum. It depends on the following principles. 1. That structures which are colored with a fluorescent dye—for example, eosin, fuchsin, fluorescein, etc.—when examined on a dark ground, stand out prominently, while blue-stained structures are inconspicuous. 2. That if the medium in which the red-stained organisms lie be of low refractive index, they are exceedingly conspicuous by dark ground illumination, and can be detected with a comparatively low power, but if mounted in balsam, cedar oil, parolein, or water, they are only seen with the greatest difficulty. The method briefly consists in examining a film containing spirochetes, stained in the usual way with Giemsa or Leishman's stain, dry, not mounted in any medium, with dark ground illumination, using a dry lens of medium power.

Dublin Journal of Medical Science

November, III, No. 527, pp. 321-400

11 Royal College of Surgeons in Ireland and War. F. C. Dwyer.
12 Use of Salvarsan. H. C. Smyth.

Glasgow Medical Journal

November, LXXXIV, No. 5, pp. 321-400

13 Case of Erythremia. G. H. Clark.

Lancet, London

November 27, II, No. 4813, pp. 1173-1232

14 Common Intestinal Protozoa of Man. C. M. Wenyon.
15 *Recognition and Isolation of Meningococcus in Nasopharynx of Cerebrospinal Fever Contacts. J. McIntosh and W. E. Bullock.
16 Double Episiotomy During Labor. J. Phillips.
17 Nitrogen Balance in Diabetes Mellitus and Its Importance in Treatment. P. J. Cammidge.
18 Ophthalmic Notes in General Hospital in Egypt. C. W. Wirgman.

15. **Meningococcic Carriers.**—Apart from the fact that the meningococcus presents no distinctive staining reactions, there are several other bacteria occurring in the throat which can

be differentiated from it only by complicated reactions, and perhaps not always even then. After giving extensive trials to a number of different mediums, the one which McIntosh and Bullock have found most satisfactory is serum agar of the following composition: nutrient 3 per cent. agar, 3 parts; horse serum, unheated, 1 part. The nutrient agar should be neutral to phenolphthalein and made from beef broth. On this medium the meningococci will grow with great rapidity, and after having undergone one or two subcultivations will live several weeks without further subculturing. The authors are convinced that meningococcus carriers are less frequent than is generally believed; and given an easy, rapid and definite means of detecting the meningococcus in the nasopharynx, it should be possible to check an epidemic of cerebrospinal fever in any small community or body of men, namely, a military unit in which the movements of individuals are under control.

Sei-I-Kwai Medical Journal, Tokyo

November, XXXIV, No. 11, pp. 53-58

19 *Primary Carcinoma of Liver. M. Okazaki.
20 Case of Acute Pancreatitis. T. Tsuuno and S. Takahashi.
21 Roentgen Ray in Surgery. H. Hida.

19. **Carcinoma of Liver.**—Okazaki examined the accounts of 721 postmortem cases in the pathologic laboratory of Tokyo Charity Hospital medical college and obtained twelve cases of primary cancer of the liver, 1.7 per cent. Splenic enlargement was present in 41.7 per cent.; ascites in 91.7 per cent.; edema in 66.7 per cent.; jaundice in 58.3 per cent. The tumor almost always occurred in the right lobe and was either single or multiple. The dissemination through the liver was constant, but in one case the tumor was limited to the right lobe. In nine cases out of twelve the liver was enlarged. It was normal in one case and atrophied in two cases. Metastasis was noticed in seven cases, seven cases also had a cirrhosis of the liver.

Archives de Médecine des Enfants, Paris

October, 1915, XVIII, No. 10, pp. 517-572

22 *Origins of Sydenham's Chorea. J. Comby.
23 Malformation of Skull and Face with Exophthalmos and Divergent Squint in Mother and Son. (Dysostose cranio-faciale héréditaire.) O. Crouzon.
24 Another Family with Malformation of Skull and Face in Seven Members in Two Generations. O. Crouzon.
25 Mongolian Blue Spot in Brazilian Children. (La tache bleue mongolique a São Paulo.) C. Ferreira.

22. **Multiple Origin of Chorea.**—Comby found evidence of syphilis in only seven of thirty-nine children with chorea; the skin tuberculin test was positive in twenty-four of the thirty-nine, and there was a history of acute articular rheumatism in six, but there were evidences in eight that the heart had been touched. All promptly recovered under two weeks' quiet in bed, a cup of milk every two hours as the only food, and arsenic pushed to the limit of tolerance in progressive doses for five days, then beginning the series anew, keeping up the arsenic for nine days.

Bulletin de l'Académie de Médecine, Paris

Nov. 9, 1915, LXXIV, No. 45, pp. 509-528

26 *Tetanus Restricted to Nerves in Injured Limb. (Une observation de tétanos localisé précoce.) S. Pozzi.
27 *Acute Nephritis in the Troops in Active Service. J. Parisot and P. Ameuille.
28 *Heliotherapy of the Wounded. (Action biotique de la lumière solaire; cure solaire des blessés en hiver.) M. de Laroquette.
29 *Local Treatment of Wounds with Horse Serum. (Le traitement des plaies par le sérum de cheval, quelques considérations sur son action et son mode d'emploi.) J. Lignières. (Buenos Aires).
30 Alcohol an Important Factor in Abnormally High Blood Pressure. (L'alcoolisme, cause d'hypertension artérielle.) C. Lian.

26. See Paris Letter, Dec. 11, 1915, p. 2102.

27. **Acute Nephritis Among the Soldiers on Active Service.**—Parisot and Ameuille relate that 1 per cent. of the soldiers in the base hospitals present evidence of acute nephritis of rapid development, with large amounts of albumin, but never any tendency to hematuria. In some the onset of the nephritis was marked by extreme edema, but under rest and dieting the storm entirely subsided in a week or two. In other cases the symptoms suggested meningeal trouble or typhoid stomach derangement, but it proved to be the work of a latent uremia. These cases, with 4 or 6 gm. of albumin each day and early anuria generally terminated fatally within a few days. In a third group of cases, there were no symptoms but fever and headache, and the discovery of the intense albuminuria was a surprise. It subsided completely in a week while the fever also subsided. The blood seemed to be sterile and agglutination tests were negative. The cause of the nephritis was a mystery in all these groups. The hypochlorite sterilization of the water could not be incriminated as this water was used only occasionally in making coffee, the men having native wines to drink. The typhoid inoculation six, eight or ten months before could not be responsible for the nephritis after such an interval. Most of the cases were in warm weather, so abnormal chilling was not a factor. The only plausible explanation seems to be that the stress of the campaign had rendered the kidneys more susceptible. The urine should be examined for albumin during periods of physical and mental stress as regularly as the temperature is tested. The course of the nephritis in his case seemed to be milder, the earlier treatment was instituted.

28. **The Biologic Action of Sunlight.**—De Laroquette's study of plants kept in greenhouses with colored glass has convinced him that the manifestly favorable action of sunlight on the tissues is not due exclusively nor even mainly to the chemical rays. Plants thrived in yellow light and did not thrive in blue light. The luminous rays are most active and the yellow are the most active of all. Exposure to the sun's rays in a greenhouse avoids chilling from wind while the heliotherapy proceeds undisturbed, the glass filter not cutting off the effect. He urges that well-ventilated greenhouses should be utilized in the care of the wounded, graduating the glare with photographers' screens. Yellow glass can be used at first, as this is less irritating. When there is no sunshine, the exposures can be continued with artificial light.

29. **Horse Serum in Treatment of Wounds.**—Lignières has been studying since 1905 the action of horse serum in treatment of wounds. He tried it first on the horse and was amazed at the rapid healing under it. He also discovered that serum drawn twenty-four hours after the first blood-letting had always a greater curative action than serum from the first. This is due probably to the regenerating processes going on after the first blood-letting. Carnot calls serum drawn in this way "hemopoietic serum." He advises keeping one or two horses for the purpose, drawing 5 or 6 liters one day and the same amount the next day. This can be repeated every fifteen or twenty days according to the demands. Compresses are dipped in the serum thus derived without heating, and are changed once or twice in the twenty-four hours. If it is to be kept for some time or transported he advises adding phenol, less than 0.5 per cent.

Lyon Médical, Lyons

October, 1915, CXXIV, No. 10, pp. 313-344

31 The Food of the French Army. (L'alimentation aux armées.) G. Mouriquand.

November, No. 11, pp. 345-376

32 *Semeiologic Importance of Modification of Tendon Reflexes Under Chloroform. J. Babinski and J. Froment.

32. Summarized in these columns, Dec. 11, 1915, p. 2124.

Paris Médical

Nov. 13, 1915, V, No. 27, pp. 465-480

33 *Medical Geography in Serbia. (Les fièvres danubiennes: Notes sur la constitution médicale endémo-épidémique serbe.) P. Gastou.
34 Staff for Plaster Casts. (Appareils plâtrés en staff.) V. Aubert.
35 Ferrous Sulphate Test for Picric Acid in the Urine with "Picric Jaundice." A. le Mithouard.
36 Scrap of Shell in Tongue Without Reaction. L. Ferrand.

33. **Medical Geography in Serbia.**—Gastou relates that in his recent experience with an ambulance corps in Serbia he

noticed that in the northern part of the country epidemics and diseases in general seemed to have a special character under the influence of the pathogenic microbes infesting the soil and water under local climatic conditions. He discusses in turn the periodically recurring types of the regional fevers, the endemic septicemic and gastro-intestinal types, malaria, and other types suggesting Malta fever or kala-azar.

Presse Médicale, Paris

Nov. 22, 1915, XXIII, No. 57, pp. 465-472

37 The Practical Application of Experimental Medicine. H. Roger.
38 Refractometer in Diagnosis of Acute Meningitis from Cerebrospinal fluid. (La réfractométrie du liquide céphalo-rachidien.) A. and A. A. Babes.
39 Compass Technic for Localization of Foreign Bodies. (Technique, observations et résultats de l'emploi du compas de Hirtz dans la localisation et l'extraction des corps étrangers.) B. Desplas and D. Chevalier.

Deutsche medizinische Wochenschrift, Berlin

Oct. 21, 1915, XLI, No. 43, pp. 1265-1296

40 *Plastic Operation on the Thyroid Cartilage Corrects Consequences of Paralysis of One Vocal Cord. (Plastik am Schildknorpel zur Behebung der Folgen einseitiger Stimmbandlähmung.) Payr.
41 Improved Technic for Amputations. (Verbesserung des Grittischen Amputationsstumpfes.) M. Wilms.
42 Experimental Infectious Jaundice. (Zur Aetiologie der Weilschen Krankheit.) Huebener and Reiter.
43 Production of Immune Bodies by Various Typhoid Vaccines. (Immunkörperbildung verschiedenartiger Typhusimpfstoffe.) O. Löwy.
44 Old and New Problems in Regard to Tetany in Infants. E. Klose.
45 *Simplified and Rapid Method for Determination of Albumin and Sugar in the Urine. (Schnellmethoden zur quantitativen Bestimmung von Eiweiss und Zucker im Harn.) E. Lenk.
46 Principles for Construction of Artificial Legs. J. Dollinger. Commenced in No. 42.
47 Artificial Leg After Wladimiroff-Mikulicz Amputation. Gaugele.
48 War and the Public Health. (Krieg und Gesundheitsfürsorge.) A. Gottstein. Commenced in No. 42.

November 4, No. 45, pp. 1325-1356

49 *Study of an Epidemic of Typhus. Otto.
50 *Vaccination Against Typhoid and Diagnosis of Typhoid in the Vaccinated. (Typhusschutzimpfung und Typhusdiagnose.) Hage and Korff-Petersen.
51 *Enlargement of the Spleen After Vaccination Against Typhoid. (Impf-Milzschwellung und Typhusdiagnose.) C. Hirsch.
52 Treatment of Gunshot and Shell Wounds of the Chest. (Zur Beurteilung und Behandlung der Brustschüsse.) W. von Brunn.
53 Search for and Removal of Projectiles. (Das Aufsuchen und die Entfernung von Geschossen.) C. Schwenk.
54 New Viewpoints in Surgery. E. Engel.
55 *Chronic Pancreatitis. M. Einhorn (New York). Commenced in No. 44.
56 *Necessity for Individualizing in Infant Feeding. (Das individuelle Moment in der Säuglingsernährung.) A. Niemann.
57 The Declining Birth Rate and the Medical Profession. (Die Stellung der Aerzte zur Frage des Geburtenrückgangs.) T. Hoffa.

40. **Plastic Operation to Correct Paralysis of Vocal Cord.**—Payr gives an illustrated description of the technic with which he succeeded in curing a young man who had suffered for two years from the effects of unilateral paralysis of the recurrent nerve. The voice is now permanently good.

45. **Simple Tests for Albumin and Sugar in the Urine.**—The albumin test is complete in ten and the sugar test in three minutes by Lenk's technic. Albumin, enzymes, etc., are adsorbed by negative substances like kaolin, charcoal, pulverized pumice stone, etc. If these are mixed with the urine after addition of Esbach's reagent, as the particles settle to the bottom of the dish they carry the albumin down with them. This proceeds more rapidly the heavier the substance. He uses pulverized pumice-stone; this drops rapidly to the bottom of the dish and carries the albumin with it, so that in ten minutes the albumin is precipitated as completely as not until after twenty-four hours by the usual technic. The Esbach reagent is a mixture of 5 gm. picric acid with 10 gm. citric acid in 500 c.c. water. His simplification of the Fehling test for sugar is to apply it to a single drop of the urine on a watch glass. This shows in three minutes the characteristic changes in tint without waiting for it to occur in a larger amount of the fluid. The minute details of these simplified tests are given.

49. **Typhus.**—Otto describes the measures taken in a large camp of war prisoners to stamp out typhus which was constantly being imported anew. The measures were directed to "unlousing" the men, thorough soaping, bathing and shaving while the barracks were being washed out with hot 5 per cent. kresol soap solution, and their clothing and bed sacks were being disinfected with steam, and the straw filling burnt. Before a man was admitted to the hospital he was bathed anew and examined for lice. The hospital quarters were thus kept free from vermin and no contagion occurred in the hospital personnel, but some contact cases developed among the attendants in charge of the unlousing. As there were only sixty-five cases in all, epidemiologic features could be studied with exceptional completeness.

50. **Diagnosis of Typhoid in the Vaccinated.**—This communication reports the conclusions from extensive, parallel application of the various diagnostic tests to determine their reliability after antityphoid vaccination. They are to the effect that agglutination is of no use whatever under these circumstances; the deviation of complement is also useless soon after vaccination, and is never a reliable substitute for the agglutination test; the blood picture cannot be relied on until from four to six weeks after the last vaccination, but the urochromogen in the urine does not seem to be modified by the vaccination, so that Weiss' potassium permanganate test has the same diagnostic significance as under other conditions. Typhoid bacilli were cultivated from the blood in ten of twelve cases, but only with repeated attempts in some.

51. **Enlargement of the Spleen After Vaccination Against Typhoid.**—Hirsch remarks that active immunization against typhoid may alone cause the spleen to enlarge temporarily.

55. Practically the same as article in THE JOURNAL, July 10, 1915, p. 149.

56. **Individualizing in Infant Feeding.**—Niemann declares that the proportion of women who are unable to suckle their infants is certainly smaller than the percentage of infants who are unable to nurse or do not thrive on breast milk. Attention has been concentrated hitherto on the preparation of the artificial food for such infants, and too little heed paid to the infants themselves. Our premises as to infant feeding are based on averages, but the babe at the breast does not get an average milk, but a particular milk from a particular woman at a particular time. The milk comes out of the darkness and disappears into the darkness without anyone seeing it. The child gets its food thus fresh and unmodified by air and light, which we know soon start destructive processes in the fat of milk even when the milk seems still fresh and sweet.

The child gets varying amounts of milk from the breast at different times, and the composition of the milk probably fluctuates from time to time. This entails a variety in the infant's food which Nature evidently intends, but which is lacking in artificial feeding. The better the care given the bottle baby, the greater the monotony in the regular amounts and in the composition of the artificial food given it, and Niemann queries whether this monotony may not be the cause or one of the causes why bottle babies do not thrive so well as the breast fed, especially in institutions. It seems to be impossible for institutions to show such fine specimens of artificially fed infants as are often raised on the bottle even in the homes of the poor. Some variety in quality and quantity according to the individual needs at the time is certainly advisable for a certain proportion of infants at least.

Niemann relates further experiences which demonstrate that certain infants thrive better on less water than others. In combating a tendency to vomit, he has given quite young infants the usual milk mixture without the water, thus more like a thick soup, and the children thrived well on it. The chart of one is given showing the regular increase in weight on half the usual amount of water. During the fifth month the weight became stationary and increasing the amount of water did no good, but the development became normal again when the amount of the milk mixture was increased

Other children need even more than the ordinary amounts of fluid; Heubner has reported a case in which the child did not thrive on its mother's unusually concentrated milk until it was given the lacking water, in the form of tea. It is our task to learn which infants need more and which less water. The same applies to carbohydrates and fats.

There must be constitutional factors at work. Some infants react to a test dose of carbohydrates with reduced output of urine. In some the same dose runs up the sugar content of the blood, while in others neither the diuresis nor the blood picture shows any modification. Unfortunately, determination of these reactions is not practicable as a routine measure in general practice, where they would prove of such assistance. He says that fat is the most inconvenient element of the food; either too little or too much may lead to severe nutritional derangement. The sensitiveness in regard to fat seems an individual property, and it persists the same throughout infancy. He has encountered it both with and without signs of the exudative diathesis, and has seen infants with the exudative diathesis in a pronounced form who bore fat well.

In short, he remarks in conclusion, no one diet formula will fit all infants or even one infant at all times. The only secret of success in infant feeding is by study of what is attainable with a given food and a given infant. And for this, wide practical experience along these lines is the best guide. Those without this will often be puzzled as to the right course to pursue, even with the most modern food mixtures at their disposal. Those with sufficient experience get along with the simplest measures. Pediatrists at the head of infant institutions generally give the preference to certain methods of feeding—sometimes methods introduced by themselves. In their hands their method proves successful because they have had so much experience with it that they recognize the indications and contraindications for it, and can interpret the results obtained and be guided by them in the management of the individual infant. In other hands the identical method may not accomplish as much. Hence, he adds, it must be reiterated again and again that students and physicians can never be given opportunities enough to collect experience by their own observation in the line of infant feeding. Only in this way will they become familiar with the indications for a particular method of infant feeding and be able to estimate the results obtained with it—all of which is simply indispensable in practice.

Medizinische Klinik, Berlin

Oct. 17, 1915, XI, No. 42, pp. 1147-1172

58 Treatment of Acute Intestinal Disease in the Troops on Active Service. (Akute Darmerkrankungen im Feld und ihre Behandlung, insbes. mit Suprarenin.) J. Strasburger.
59 Therapeutic Electropalpation. (Ueber palpatorische Anwendung elektrischer Ströme.) M. Kahane.
60 Typhus in Camp of War Prisoners. (Die Fleckfieberepidemie im Gorlitzer Kriegsgefangenenlazarett.) W. G. Rondke.
61 Nervous Affections in the Soldiers on Active Service. (Neurologisches während des Feldzuges.) L. Sztanojevits.
62 Serotherapy of Dysentery. (Die Serumbehandlung der Ruhr.) A. Klesk.
63 Cherry Stones Accumulated in Man's Rectum; 1,874 Removed. J. Falk.
64 Gins' Modification of Neisser Technic Facilitates Showing up of Diphtheria Bacilli. (Zum Nachweis von Diphtheriebacillen im Originalitupferausstrich.) W. Schürmann and E. G. Pringsheim.
65 *Clinical Value of the Miostagmin Reaction in Diagnosis of Cancer. A. Balcarek.

65. **The Miostagmin Reaction.**—Balcarek studied the course of the case in connection with the miostagmin reaction in three cases of sarcoma and forty-three of cancer, as also in 135 patients with various other affections, the ordinary cases of a general medical hospital. The response was negative in these 135 miscellaneous cases, and negative also in the few cases of cancer displaying a tendency to scirrhus. But it was distinctly positive with all the other cancer patients and gave the sole clue to successful treatment in a number of dubious cases which he describes in detail. A positive reaction was obtained further in four cases of nephritis in the uremic stage, in a case of pulmonary tuberculosis and in one of a valvular defect. In these last two cases the test was made at the height of menstruation, which possibly may be the explanation of the puzzling positive reaction. In a case of intercurrent pneumonia with cancer of the pancreas, the response was negative but veered to positive as soon as the pneumonia subsided. Effusions and transudates did not always give a positive reaction with cancer when the serum findings were strongly positive.

Münchener medizinische Wochenschrift, Munich

Nov. 9, 1915, LXII, No. 45, pp. 1525-1560

66 *Treatment of Infectious Diseases by Substances Which Activate the Protoplasm. (Ueber die unspezifische Therapie von Infektionskrankheiten.) W. Weichardt.
67 *Venesection in Treatment of Hot Flashes, etc., of the Menopause. (Zur Behandlung der Ausfallserscheinungen.) E. Engelhorn.
68 Intravenous Injection of Dilute Lactic Acid in Treatment of Blood Infection. (Zur Behandlung der Blutinfektion.) F. Jessen.
69 The By-Effects of Neosalvarsan. H. E. Kersten.
70 *Artery of Donor Slipped Directly into Recipient's Vein for Transfusion of Blood. Sauerbruch.
71 Bacillary Dysentery. (Zur Klinik der Bazillenruhr.) M. Matthes.
72 Night Blindness Among the Troops in the Field. Paul.
73 Naphthalin for Extermination of Lice. F. Lenz.
74 Sexual Abstinence. (Sammelforschung der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten über die Frage der sexuellen Abstinenz.) A. Neisser.
75 Care of Stump After Amputation. (Kriegschirurgisches über den Amputationsstumpf.) D. P. Janssen. Commenced in No. 44.

66. **Nonspecific Treatment of Infectious Diseases.**—Weichardt has continued his research on activation of the protoplasm by injection of small amounts of various substances, such as the cleavage products of albumin or even simple salt solution. The heart, for example, is stimulated to extra functioning by injection of a certain small amount of deutero-albumose; when a larger amount is injected, the temperature falls, the respiration rate is retarded, and there is somnolency. The phenomena observed are exactly like those with vaccine therapy of typhoid, for instance. The response is not at all specific; it occurs the same with typhoid vaccine, colon bacillus vaccine and various other substances. It can be instructively studied with the kymographion, and a number of tracings with this are reproduced, showing the much increased action of the isolated frog heart under the influence of a stimulating dose of albumose or salt solution.

67. **Venesection for Climacteric Nervous Disturbances.**—Engelhorn noted abnormally high blood pressure in certain cases of cardiovascular disturbances in women at the menopause. This suggested that withdrawal of blood might aid in restoring the balance in the vasomotor system. Hufeland (1839) extolled the advantages of venesection every six to twelve weeks during the menopause, and others since have commended it. Engelhorn has applied it in a number of cases and the annoying "hot flashes," sensation of heat and attacks of sweating and redness all subsided. These results were the more striking as the women did not know the purpose of the constriction of the arm and puncture of the vein. Analogous nervous phenomena are sometimes encountered at puberty, and evidently are due to the same deficit or perversion in ovarian functioning, manifested by amenorrhea, dysmenorrhea, infantilism, chlorosis or other disturbance. In some cases of this kind, after failure of other measures, he has resorted to venesection with gratifying results. He never draws more than 100 c.c. at a time, but had occasion to repeat the venesection in a few cases.

70. **Simplified Technic for Transfusion of Blood.**—Sauerbruch isolates the radial artery of the donor and slips it into the recipient's median vein, like a cannula. He works the artery loose for a stretch of 5 or 6 cm. and cuts it as far as possible from the elbow. The distal stump is ligated, the proximal left open and after about 1 c.c. of blood has flowed into a measuring glass and the time this required has been recorded, the bleeding end of the artery is pushed for 1 or 2 cm. into a slit in the vein. By the size of the artery and the time-unit, the amount of blood passing into the vein can be estimated. It usually takes ten or twelve minutes for transfusion of from 120 to 200 c.c. of blood. The

artery is then drawn out, a ligature thrown around the upper part of the exposed section, the free end is cut off and the skin sutured. Sauerbruch has applied this method a number of times, even in the field hospital. The recipient reclines with his arm fastened to a small table. The donor sits on a high chair so that he can place his wrist close to the other's arm. The technic is so simple, he says, that any practitioner can apply it. An illustration shows the tip of the artery being pushed into the vein.

Wiener klinische Wochenschrift, Vienna

Oct. 28, 1915, XXVIII, No. 43, pp. 1153-1184

76 Improved Technic for Enhancing and Testing Virulence of Pneumococci, etc., by the Use of Tissues Surviving Outside the Organism. S. Baecher.
77 Artificial Light in Treatment of Pemphigus. (Künstliche Höhensonne bei Pemphigus vulgaris.) Brandweiner.
78 Physical Examination to Detect Tendency to Epilepsy. (Die Methoden der Kephaloskopie und Kephalometrie bei Epileptikern.) M. Benedikt.
79 Devices to Aid in Overcoming Consequences of Wounds in War. (Heilgeräte für Folgen nach Kriegsverletzungen.) F. Riedl. (Federstreckapparat für Hand und Finger bei Radialislähmung.) A. Saxl.
80 Device to Connect Garment with Electric Current or Portable Storage Battery; the Electrowarmer. (Neues Kälteschutzmittel.) M. Beck and H. von Schrötter.

Zeitschrift für klinische Medizin, Berlin

1915, LXXXII, Nos. 1-2, pp. 1-198. Last Indexed Sept. 18, p. 1065

81 *Retention of Salt Without Retention of Water. (Organuntersuchungen sowie experimentelle Studien über anhydropische Chlorretention.) J. Leva.
82 Dwarf Growth Probably Due to Disturbances in Internal Secretion. (Nanosomie und innere Sekretion.) M. Levy.
83 *Symptomatology and Diagnosis of Rheumatic Heart Block. T. v. Podmaniczky.
84 *Influenza Pneumonias. (Beobachtungen bei kruppöser Pneumonie im Felde.) Arneth.
85 *Elimination of Certain Elements of the Urine with Liver Disease. (Ausscheidung einiger Harnbestandteile bei Lebererkrankungen.) W. v. Moraczewski and E. Herzfeld.
86 *Tests of Kidney Functioning with Orthostatic Albuminuria and in Nephritis in Children. H. Zondek.
87 Epidemic Paratyphoid of Type A. E. Lehmann, Mäulen and Schricker.
88 Immunity to Typhoid and Antityphoid Vaccination. F. Noack.
89 *The Edema with Chronic Kidney Disease. (Ueber das Brightsche Oedem.) L. Hess.

81. **Retention of Salt Without Edema.**—Leva describes the necropsy findings in two cadavers with normal kidneys and in twelve with heart or kidney disease or both, but without any tendency to dropsy. The organs were found to contain two or three times the normal sodium chlorid content, and research on rabbits confirmed the possibility of extreme retention of salt without retention of water.

83. **Rheumatic Heart Block.**—The heart block occurred transiently in the course of acute articular rheumatism in one young man. The attack came on suddenly, with dizziness; the radial and carotid pulse dropped to 32 while the pulse in the jugular vein was 94 at the same time. The pulse was full and regular. The next day the pulse was 50, both carotid and jugular beating together. In a second case the man of 29 had had heart trouble for ten years since the articular rheumatism. The actual pulse was 40, while there was a pulsation in the jugular vein with a beat of 70 or 80 to the minute. The heart symptoms had grown gradually worse till they had entered a stationary phase which had persisted for years. There seems to be total permanent heart block left by a rheumatic myocarditis.

84. **Influenza Pneumonia.**—Arneth gives the histories of forty-two cases of pneumonia with influenza bacilli in the sputum or evidence of influenza otherwise. In 65 per cent. more than one lobe was involved, and in 32.5 per cent. the pneumonia was crossed. The pectoral fremitus was found less attenuated the milder the process, and thus it served as a guide to prognosis and treatment. The latter consisted mainly in watching over and strengthening the heart.

85. **Elimination of Elements of the Urine with Abnormal Liver Conditions.**—In one series of tests, healthy persons on a starvation diet eliminated more uric acid, acetone, indican, fat acids and ammonia. This is accepted as a sign that the liver was suffering from the comparative inanition, the functioning being affected as if the liver had been exhausted from overwork. Six patients with liver disease and seven with diabetes or some blood disease were also tested, the findings confirming the important influence of impaired liver functioning on the metabolic processes. There does not seem to be any specific elimination exclusively characteristic of liver disease; the characteristic feature is the grouping of the various abnormalities, the elimination being abnormal of practically all the elements of the urine, as he shows by the tabulated details.

86. **Kidney Functioning in Nephritis in Children.**—Among the practical results of the extensive research on orthostatic albuminuria and nephritis here reported, is that the elimination of salt and of nitrogen have a reciprocal influence. It is possible to modify one by artificially augmenting the other, and also by augmenting the intake of water. This interdependence of the metabolism of nitrogen and of salt renders it possible to influence the functioning of the tubules and glomeruli separately. If, for instance, the nephritis is of the vascular type, the tubules have to share in the elimination of the salt and urea which the glomeruli are unable to cope with. The tubuli, therefore, accomplish this task as far as possible in addition to their own regular task. By reducing the intake of salt, the extra task thrown on the tubuli is thus lightened, and they are able to concentrate their forces on the elimination of nitrogenous substances. The reverse also occurs; the elimination of salt is promoted by lessening the task of nitrogen elimination. Hence it is not necessary to exclude salt and nitrogen at the same time from the diet in kidney disease; one alone is enough. Still less is it necessary or advisable to restrict the patient to an exclusive milk diet. We can tranquilly allow salt to nephritics, even when there is edema, if we restrict the intake of albumin to correspond, and vice versa. The amount we can thus permit varies with the extent of the damage of the kidney in the individual case, and should be determined by the metabolic findings.

Treatment on these principles has been highly successful in Zondek's experience. Some children with edema were allowed up to 5 gm. of salt or more, but the edema subsided and the proportional elimination of salt proceeded satisfactorily—provided the intake of albumin was restricted to the empirically determined amount. In the same way, the residual nitrogen in the blood declined while the child was getting 80, 100 or 120 gm. of albumin every day but no salt or very little. In this way the diet can be varied and kept palatable. One child with severe insufficiency of the kidneys had been kept on a liter of milk daily, and the dropsy kept increasing, while it began to go down as soon as the child was given less albumin than corresponds to a liter of milk. Under no other conditions is strict individualization so necessary, he declares, as in the dietetic treatment of kidney disease. Recovery is not complete until the kidney is able to take charge of the amounts of salt, albumin and water, corresponding to the patient's age, given together and eliminated together, the same or following day.

89. **Edema in Bright's Disease.**—This communication from the third university medical clinic of Vienna, in charge of Chvostek, fills fifty pages and emphasizes the importance of injury of the walls of the vessels as a factor in dropsy. Another point emphasized is the lack of dependence between edema and diuresis. Abnormally protracted elimination after lactose tests is a sign of constitutional inferiority of the cardiovascular system. This delayed elimination of lactose is the rule with orthostatic albuminuria and in obstinate Bright's edema. In some cases—the details of which are tabulated—the nephritic edema began with acute onset and assumed from the start the character of stasis edema, of the cardiac type, and yet the heart showed no signs of any serious derangement, but the patients were of the thymicolymphatic type, with narrow arteries. In these and some other cases without manifest nephritis, the patients were evidently of abnormal constitution and the edema displayed abnormal features.

Zeitschrift für Tuberkulose, Leipzig

November, 1915, XXIV, No. 6, pp. 401-484

90 *Heliotherapy and Pigment. A. Jesionek.
91 *Origin of Apical Tuberculous Processes. VI. (Betrachtungen über die Entstehung der tuberkulösen Lungenspitzenphthise.) C. Hart.
92 Tuberculosis in Children. (Zur Statistik der Tuberkulose im Kindesalter in Elsass-Lothringen.) E. Stern.

90. **Heliotherapy and the Pigment Generated in the Skin.**—Jesionek declares that we must get it fully into our minds that light can have no biologic action unless it is absorbed. He also presents evidence that the main factor in the therapeutic action of the light rays is the pigment found in the epidermis under their influence; not the pigment inside the cells but the excess of pigment granules formed and thrown off by the cells. His assumption is thus that certain substances are formed in consequence of the action of light on the skin, and that the excess of these substances gets into the circulation and thus reaches in time the tuberculous foci and acts on them. He does not ascribe a therapeutic action to the stable pigment but to that which gets into the circulation. The way in which the tanned skin tends to recover its whiteness when it is no longer exposed to the sunshine, testifies to the rapidity of absorption of the pigment. There can be no doubt, he states, that this absorbed pigment has more or less of an influence on physiologic and pathologic processes in the body. Light is not the only pigment-producing element, but under all circumstances the pigment is the product of a specific faculty of the cells derived from the ectoderm. The pigment is not inherited, but the faculty to produce it and in certain proportions is inherited. Negroes as well as whites generate more pigment under exposure to sunlight, and the excess is absorbed just as in whites. Removed from their natural environment and exposure of the body to the light, negroes no longer generate pigment in abundance and the system may feel the lack of this pigment supply to which the cells have been accustomed. This may be the cause for the peculiar susceptibility to tuberculosis of the negro race in civilization.

Experimental research will help to solve this question. He says further that attention should be paid also to the fact that, among whites, individuals of a pronounced brunette type—and hence with greater pigment-producing faculty—acquire tuberculosis less frequently than blondes, whose skin does not generate pigment so readily. For these and other reasons cited, he ascribes to the melanotic pigment of the epidermis decisive importance in the success of heliotherapy. He adds that further research and experience will reveal whether a specific immunizing action can be ascribed to the pigment and its derivatives. It is certain that more exposure to sun and light than is common with our present modes of life can do no harm but rather benefit, when not carried to excess. Aside from the pigment—the importance of which, at least as a protection against exogenous injuries (Solger), is being recognized more and more—light probably influences absorption processes in the epidermis, and in this way affects the vascular system and through this the nutrition and metabolism of the skin.

91. **Mechanical Predisposition to Tuberculosis Gives Basis for Effectual Prophylaxis.**—In his sixth article on the origin of apical tuberculosis, Hart reiterates that mechanical factors are responsible for the localization of the tubercle bacilli at the apex, and that it is in our power to do away with the mechanical conditions affording the predisposition. He cites Sumita's experience that even as late as in the thirties the development of the chest is not completed, and it is susceptible of being modified by functional stimulation to growth. He quotes further the remark of a sanatorium director that not one of the patients who have come there for treatment knew how to breathe properly. Hart insists that a child entering school has a right to the best physical training available, as well as the development of the mind, and especial pains should be taken to develop the chest. If this were done systematically, there would be no mechanical predisposition to apical disease in the next generation and tuberculosis might die out from lack of material. Systematic breathing exercises, gymnastic exercises done while singing loud, are the main reliance for children who are not robust. The importance of loud singing for the development and expansion of a child's chest has been emphasized for years, but little heed was paid to it until the Roentgen rays demonstrated the healing of apical processes as the chest expanded.

He regards the compulsory military service as of inestimable value in overcoming a mechanical predisposition to apical disease, saying that experience has repeatedly shown that young men backward in physical development may catch up with and surpass their mates during their last phase of growth, during their military service. The benefit for the health of the populace from compulsory military service is appreciated far too little at present, he reiterates. Since preventive medicine has made such progress, camp diseases need no longer be feared, while the military training impresses hygiene and right living on the men and returns them to civil life healthy and settled, to found their own hearth and family. This applies particularly to the prophylaxis of tuberculosis, and Hart pleads that youths be allowed to enter voluntarily on military service at an age somewhat younger than the age limit for the compulsory service. This would give the young a chance to get out from the bad air and cramped attitudes of the store and factory during the years of the most important phase of growth. Young men with chests of the phthisical type are now rejected by recruiting officers, but he urges that these are the very ones who might benefit most, and the earlier they are accepted the better. Hart would like to have the measures for physical development in all circles made compulsory. He calls on physicians to be leaders in this prophylaxis, "which, beyond everything else, documents the ideal trait in the medical profession. Now that the importance of the mechanical predisposition to apical disease is recognized and the means to overcome this predisposition are known, our task lies clear before us."

Zeitschrift für Urologie, Leipzig

August, 1915, IX, No. 8, pp. 281-320

94 Development of Clinical Diagnosis of Disease of the Urinary Apparatus. (Zur Entwicklung der klinischen Harndiagnostik.) E. Elstein. Concluded.
95 German Urology in the War. H. Lohnstein. Continued.

September, No. 9, pp. 321-360

96 *Primary Localization and Mode of Spread of Tuberculous Process with Chronic Renal Tuberculosis of Blood-Borne Origin. G. Ekehorn (Upsala).

October, No. 10, pp. 361-400

97 Wounds of the Bladder in War. (Zur Kenntnis der Blasenschüsse.) P. Goldberg.
98 German Urology in the War. H. Lohnstein. Continued.

96. **Primary Localization of Tuberculosis in the Kidney.**—Ekehorn concludes from his study of two cases that the primary lesion was in one small cavity in one kidney, probably the result of an infected embolus, the only process directly of blood-borne origin. From this cavity the infection spread by continuity, and the urine sweeping away the bacilli from the spreading focus, laved the hilus and thus sowed infection over its surface. No primary cavity could be found in the other case but he thinks there must have been and always is some single focus of blood-borne origin to start with.

Zentralblatt für Chirurgie, Leipzig

Nov. 6, 1915, XLII, No. 45, pp. 801-816

99 *Sheath Made from the Cicatricial Tissue in Suture of Severed Nerve. (Naht durchtrennter Nerven mittels Einhülsung im Eigengewebe.) H. Hans.

99. **Sheath for Sutured Nerve.**—Hans loosens up the nerve and slits lengthwise the club-shaped cicatricial tissue in which the stump of the nerve is embedded. This club-shaped end is then hollowed out to form a shell or cup which fits over the other stump and is fastened to it with four or five stitches. The exact technic is shown in two illustrations; it is claimed that by this method the special fibers of the nerve are coaptated with more precision.

Zentralblatt für Gynäkologie, Leipzig

Nov. 6, 1915, XXXIX, No. 45, pp. 779-794

100 War Affords Data on Duration of Pregnancy. (Zeitpunkt der Konzeption und die Dauer der Schwangerschaft.) F. Ahlfeld.

Nov. 13, No. 46, pp. 795-826

101 *Intracranial Hemorrhage from Birth Trauma. (Die intrakraniellen Blutungen des Neugeborenen infolge der Geburt.) A. Mayer.

101. **Intracranial Hemorrhage in the Newly Born.**—This number of the *Zentralblatt* is devoted almost entirely to Mayer's analysis of the literature on this subject and report of three cases from his own experience and discussion of the source of the bleeding and the causes. The forceps had been used in each of Mayer's cases, and necropsy showed that the tentorium had been lacerated in each case. The pelvis was of normal size in two of the cases, but premature rupture of the bag of waters and inadequate labor contractions finally compelled operative delivery. Pressure from temple to temple and also from the frontal to the occipital bone may be dangerous, but cases are known in which the hemorrhage occurred with smooth normal delivery in women with wide birth passage and normal pelvis, who had already borne children. He cites twelve cases of this kind, remarking that they show that there must be some predisposition on the part of the child. It is possible that letting the child lie on its side may compress the veins and induce venous hyperemia, thus aggravating a tendency to hemorrhage in the tentorium region which the newly born might otherwise survive. The pressure from the accumulating blood explains the cases in which slightly asphyxiated newly born children became more and more asphyxiated, and explains also the sudden deaths of not asphyxiated newly born who seemed to be normal for a time and then died suddenly.

The symptoms vary as the hemorrhage is above or below the tentorium, and the reports of operative removal of the accumulated blood before irreparable damage has been done sound encouraging. He thinks that we may be able to save many of the children by prompt intervention. With hemorrhage above the tentorium the symptoms are more of a cortical nature, principally in the domain of the facial, oculomotor and accessorius nerves and in the extremities. With hemorrhage below the tentorium, the symptoms are from the spinal nerves, such as rigid extremities, erection of the penis and wrinkling of the skin on the scrotum. Spasms have differential value only when restricted to one side or one extremity. With hemorrhage below the tentorium the children are strikingly quiet and somnolent, and there may be cyanosis; the fontanels do not bulge and the lumbar puncture fluid usually shows blood. Puncture of the subdural space through the large fontanel at the point farthest toward the side may decide the question, while it seems perfectly harmless and saves much time. With hemorrhage above the tentorium the children are restless and scream from the stretching of the dura; the greater fontanel bulges, and the vagus center, the vasomotor center and the respiration center show signs of irritation. If the children survive to the stage of paralysis the spasms subside, there is general relaxation, the reflexes die out, and the respiration becomes of the Cheyne-Stokes type. If the hematoma is not very extensive, it may be possible to aspirate the blood out through the fontanel or release it by lumbar puncture. Dutreix has reported three out of five cured by repeated puncture, and other French writers have published successful cases of this kind. Mayer has had no personal experience in this line but his review of the literature encourages more active measures than have been the rule hitherto.

Gazzetta degli Ospedali e delle Cliniche, Milan

Nov. 4, 1915, XXXVI, No. 76, pp. 1185-1200

102 Abbreviation and Symbols for Early Care and Records of the Wounded. (Sul regime delle medicazioni nelle formazioni sanitarie di guerra.) O. Cipollino.

Nov. 7, No. 77, pp. 1201-1216

103 Cerebral Embolism with Congenital Mitral Stenosis in Boy of 16; Recovery Under Quinin and Iodid. C. Pascale.

Nov. 10, No. 78, pp. 1217-1232

104 *Interpretation of Findings with Galactose Test of Liver Functioning. (Sul rapporto tra funzionalita epatica ed ascite nella cirrosi.) G. A. Pari.

Nov. 12, No. 79, pp. 1233-1248

105 *Prophylaxis of Malaria. (In tema di malaria.) A. De Blasi.

104. **Galactose Test of Liver Functioning.**—Pari's further experience has confirmed the fluctuations in the response to the galactose test in the same person at different times. Hence a single test has comparatively little significance. He reports in detail three cases of cirrhosis of the liver tested repeatedly for alimentary galactosuria. The response demonstrated that the liver was able to do its work better at some times than at others, its functioning fluctuating contemporaneously with the amounts of ascitic fluid produced but in the inverse direction.

105. **Prophylaxis of Malaria.**—De Blasi expatiates on the importance of rainy seasons and mild winters as favoring the spread of malaria and rendering the type graver. He insists that too much reliance should not be placed on quinin in prophylaxis, but that all other preventive measures should be given due importance, the sick isolated, and rooms they have used disinfected before the nonmalarial are allowed to occupy them. In the cases rebellious to quinin, he has often found methylene blue effectual and places great reliance on it. The alleged cyclic recrudescence of malaria he ascribes exclusively to climatic conditions.

Riforma Medica, Naples

Nov. 6, 1915, XXXI, No. 45, pp. 1233-1260

106 Heart Block. (Aritmie dromotrope: Disordini di conduzione.) G. Rummo.

107 Primary Perithelioma of Lymphatic Gland Rapidly Fatal. G. D'Oria. Commenced in No. 44.

Nov. 13, No. 46, pp. 1261-1288

108 Pulsus Alternans. (Aritmie inotrope; Disordini di contrattilita.) G. Rummo.

109 *Differential Importance of Precipitin Reaction in Epidemic Cerebrospinal Meningitis. M. Cassella.

110 Pathogenic Relations Between Blood Diseases and Some of the Products of Intestinal Putrefaction. O. Cantelli. Commenced in No. 45 and to be continued.

109. **Precipitin Reaction in Diagnosis of Meningitis.**—Cassella shows by eight clinical cases the extreme importance of the precipitin reaction in the lumbar puncture fluid in obscure cases of epidemic meningitis. He found the zonal technic most reliable, and that it was immaterial whether it was applied cold or by the thermoprecipitin technic. The patient's serum during the disease never responded positively either to cerebrospinal fluid or to filtrates of meningococcus cultures, but serum from convalescents had high precipitating power for both, especially with the zonal technic. Ascoli's method for the thermoprecipitin reaction, Vincent's and the zonal technic were applied in each of the eight cases.

Boveri's zonal color reaction was positive in all but one case, and in this the precipitin tests were all negative. (Boveri's reaction was described in these columns, July 11, 1914, p. 205.)

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Aug. 14, 1915, II, No. 7, pp. 1021-1092

111 Pseudomotor Nerve Action; Vulpian's Paradoxic Tongue Sign. (Onderzoekingen over spiertonus en spiertonusinnervatie. I. Het paradoxe tongverschijnsel van Vulpian.) G. van Rijnberk.

112 Experiences with Cancer of the Breast: Mammectomy Successful in Forty Per Cent. of Fifty-Six Cases. (Eenige gevallen van amputatio mammae.) S. M. Kropveld.

113 Symmetrical Dysmenorrheic Dermatitis; Eighth Case on Record. H. A. M. E. Lommen.

Ugeskrift for Læger, Copenhagen

Nov. 18, 1915, LXXVII, No. 46, pp. 1785-1842

114 Recovery Under Magnesium Sulphate in Severe Case of Tetanus. K. Lehmann.

115 *Localization of Abscesses in the Lungs. E. Petersen.

115. **Localization of Abscesses in the Lungs.**—Petersen compares the findings with various tests and the clinical course in 111 cases of a pulmonary abscess. Differential and topical diagnosis is usually difficult and the localization is sometimes nearly impossible, and yet the success of operative treatment depends on exact knowledge as to where the abscess will be found. All clinical diagnostic measures must be tried and the findings compared. The stethoscope and the Roentgen rays are the main reliance.